APPENDIX A

MCCM BOX-GUM WOODLAND ENDANGERED ECOLOGICAL COMMUNITY IMPLEMENTATION PLAN SUPPLEMENTARY REPORT AND MCCM THREATENED FAUNA IMPLEMENTATION PLAN SUPPLEMENTARY REPORT

Maules Creek Coal Mine White-Box Yellow-Box Blakely's Red Gum Woodland Endangered Ecological Community Implementation Plan: Supplementary Report

Prepared by AMBS Ecology & Heritage
for Whitehaven Coal Limited

Final

October 2024

AMBS Reference: 24511

AMBS Ecology & Heritage
www.ambs.com.au contact@ambs.com.au 02 9518 4489

Document Information

Citation:	AMBS Ecology & Heritage 2024, *Maules Creek Coal Mine Threatened Fauna Implementation Plan: Supplementary Report*. Consultancy report to Whitehaven Coal.
AMBS Ref:	24511
Versions:	Version 1: Draft Report issued July 2024 Version 2: Draft Report Issued September 2024 Version 3: Final Report issued October 2024
Recipient:	Andrew Wright
Authors:	Julian Herting, Belinda Pellow
Approved by:	Belinda Pellow

Contents

1 Introduction 4
1.1 Background 4
1.2 Objectives 5
1.3 Revisions to MCCM Biodiversity Offset Strategy 5
1.4 Relevant Conditions of Approval 14
2 Status of the Implementation Plan Actions 15
2.1 Planning 28
2.2 Soil Testing and Nutrient Management 29
2.3 Surface Preparation 29
2.4 Revegetation, Seeds and Tube Stock 29
2.5 Maintenance 30
2.6 Grazing Management 30
2.7 Weed Management 31
2.8 Feral Animal Management 31
2.9 Fire Management 32
2.10 General 32
3 Conclusion 33
References 34

Tables

Table 2.1 Summary of management actions described in the Original EECIP 2015 and updates including their status to inform the revised MCCM BMP. 16

Figures

Figure 1.1 Location of Box Gum Woodland CEEC across the MCCM Offset Areas from Olivedeen, Kelso, Velyama, Louenville, Teston South and Teston North 7
Figure 1.2 Location of Box Gum Woodland CEEC across the MCCM Offset Areas Wollandilly, Thornfield and Onavale 8
Figure 1.3 Location of Box Gum Woodland CEEC across the MCCM Offset Areas Mt Lindesay and Wirradale/Wongala South 9
Figure 1.4 Location of Box Gum Woodland CEEC across the MCCM Offset Areas Roseglass and Bimbooria 10
Figure 1.5 Location of Box Gum Woodland CEEC across the MCCM Offset Area Triangle 11
Figure 1.6 Location of Box Gum Woodland CEEC across the MCCM Offset Areas Neranghi North and Coonoor 12
Figure 1.7 Location of Box Gum Woodland CEEC across the MCCM Offset Area Long Gully 13

1 Introduction

1.1 Background

AMBS Ecology & Heritage was commissioned by Whitehaven Coal Limited (WHC) to undertake a review of the Maules Creek Coal Mine (MCCM) White-Box Yellow-Box Blakely's Red-Gum Woodland Endangered Ecological Community Implementation Plan (WHC 2015b) and develop a Supplementary Report (this report) to contemporise the information contained within it. The original White-Box Yellow-Box Blakely's Red-Gum Woodland Endangered Ecological Community Implementation Plan (EECIP 2015) was developed to meet the requirements of Project Approval 10_0138 Schedule 3 Conditions 48, and to be incorporated into the Maules Creek Coal Mine Biodiversity Management Plan (Original MCCM BMP) where it was used to identify pathways for implementing management actions to enhance habitats for threatened species and communities.

Several regulatory and legislative changes have occurred since the finalisation of the EECIP 2015. Specifically:

- The Threatened Species Conservation Act (TSC Act 1999) was rescinded and replaced with the Biodiversity Conservation Act 2016 (BC Act 2016);
- The MCCM Biodiversity Offset Strategy (BOS) was modified/varied due to:
    - a revised process for establishing long-term security of the Offset Areas with the introduction of the NSW Biodiversity Conservation Trust (BCT) including a revised vegetation classification system in NSW (Plant Community Type [PCT] vegetation mapping) and detailed cadastral survey of the property boundaries by a registered property surveyor;
    - the initial Conservation Agreements (CAs) for the Offset Areas associated with MCCM were registered between 1 April 2020 and 2 June 2021;
    - Variations to Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 (EPBC) Approval 2010/5566 approved on 24 March 2021 and 21 October 2022 and revised Commonwealth BOS approved on 9 November 2023;
    - NSW Project Approval 10_0138 (MOD9) was approved on 20 March 2024 for a revised NSW BOS; and
    - BCT registered the final CAs for the MCCM Offset Areas between 26 February and 19 March 2024.
- Under the BC Act 2016, White-Box Yellow-Box Blakely's Red-Gum Woodland Endangered Ecological Community has been reclassified to a critically endangered ecological community (CEEC) and under the EPBC Act 1999 the Conservation Advice for the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Cth DCCEEW, 2023) was updated; and
- An evolving understanding of the threatening processes impacting Box Gum Woodland CEEC and changes to the recommended management responses, and how to restore and manage Box Gum Woodland CEEC.

In light of these changes, the original MCCM BMP (WHC 2015a) is undergoing a review which has provided an opportunity for WHC to update the EECIP 2015 to inform the revised MCCM BMP 2024. The changes described above are primarily relevant to the MCCM BOS component of the MCCM BMP. As such, this Supplementary Report will focus on factors concerning the MCCM Offset Areas.

1.2 Objectives

The objectives of this review are:

- to update and provide supplementary information to the EECIP 2015 that will accompany the updated MCCM BMP (WHC 2024);
- to document management actions in the EECIP 2015 that have been completed or are no longer required; and
- to add in new actions and initiatives to inform the revised MCCM BMP (WHC 2024); and
- summarise additional initiatives and future planned actions to address Box Gum Woodland CEEC restoration.

The original EECIP 2015 also addressed the rehabilitation of the post mine landform in association with a Rehabilitation Management Plan (RMP) as well as the management of Box Gum Woodland CEEC in the Offset Areas. Given the key regulatory and legislative changes noted in Section 1.1 only materially affected the MCCM BOS; this supplementary report updates those implementation actions that relate to the management of Box Gum Woodland CEEC (See Table 4 of the EECIP 2015) and align with the objectives of the revised MCCM BMP (WHC 2024) for MCCM Offset Areas.

1.3 Revisions to MCCM Biodiversity Offset Strategy

Modification 9 to NSW Project Approval 10_0138 and EPBC Approval 2010/5566 variation revised the boundaries of existing MCCM Offset Areas and added additional Offset Areas to the MCCM BOS. The quantum of Box Gum Woodland CEEC approved in the revised MCCM offset strategy is outlined in Table 1.1. Across all MCCM Offset Areas, the total Box Gum Woodland CEEC includes 5,632.4 ha listed under the BC Act, of which 4,114.4 ha are in the Woodland Form and 1,518 ha are in the Grassland Form (Table 1.1). Subsequent to the revised Commonwealth BOS approved on 9 November 2023; the NSW Project Approval 10_0138 (MOD9) was approved on 20 March 2024 that reincluded Teston North and Tralee Offset Areas into the revised NSW BOS with an extra 12. 8ha of Box Gum Woodland CEEC for the revised total of 4,114.4 ha in woodland form. The location of the Box Gum Woodland CEEC with MCCM Offset Areas is shown on Figures 1.1 – 1.7.

Table 1.1 Box-Gum Woodland CEEC listed under the BC Act in the modified biodiversity offset strategy

Offset Area	Box-Gum Woodland CEEC listed under the BC Act (Woodland Form)	Box-Gum Woodland CEEC listed under the EPBC Act (Woodland Form)	Box-Gum Woodland CEEC listed under the BC Act (Grassland Form)	Box-Gum Woodland CEEC listed under the EPBC Act (Grassland Form)	Total Box-Gum Woodland CEEC listed under the BC Act	Total Box-Gum Woodland CEEC listed under the EPBC Act
Onavale	10.3	10.3	30	30	40.3	40.3
Wollandilly	52.3	52.3	17.3	17.3	69.6	69.6
Mt Lindesay	660.9	660.9	219.2	219.2	880.1	880.1
Wirradale and Wongala South	729.8	729.8	970.9	970.9	1,700.7	1,700.7
Bimbooria	212.9	212.9	160.3	160.3	373.2	373.2
Roseglass	19.5	19.5	94.3	94.3	113.8	113.8
Kelso	4	4	0	0	4	4
Louenville	36	36	0	0	36	36
Velyama	69.8	58.8	3	3	72.8	61.8
Teston South	63.1	63.1	17.6	17.6	80.7	80.7
Teston North	3.9	3.9	0	0	3.9	3.9
Tralee	8.9	8.9	0	0	8.9	8.9
^Thornfield	7.3	7.3	5.4	5.4	12.7	12.7
^Triangle	741.9	741.9	0	0	741.9	741.9
^Neranghi North	567	567	0	0	567	567
^Coonoor	573.9	573.9	0	0	573.9	573.9

Offset Area	Box-Gum Woodland CEEC listed under the BC Act (Woodland Form)	Box-Gum Woodland CEEC listed under the EPBC Act (Woodland Form)	Box-Gum Woodland CEEC listed under the BC Act (Grassland Form)	Box-Gum Woodland CEEC listed under the EPBC Act (Grassland Form)	Total Box-Gum Woodland CEEC listed under the BC Act	Total Box-Gum Woodland CEEC listed under the EPBC Act
^Long Gully	352.9	352.9	0	0	352.9	352.9
Total	**4114.4**	**4103.4**	**1,518**	**1,518**	**5632.4**	**5621.4**

^ Additional property added in NSW Project Approval 10_0138 Modification 9 and EPBC Approval 2010/5566 variation

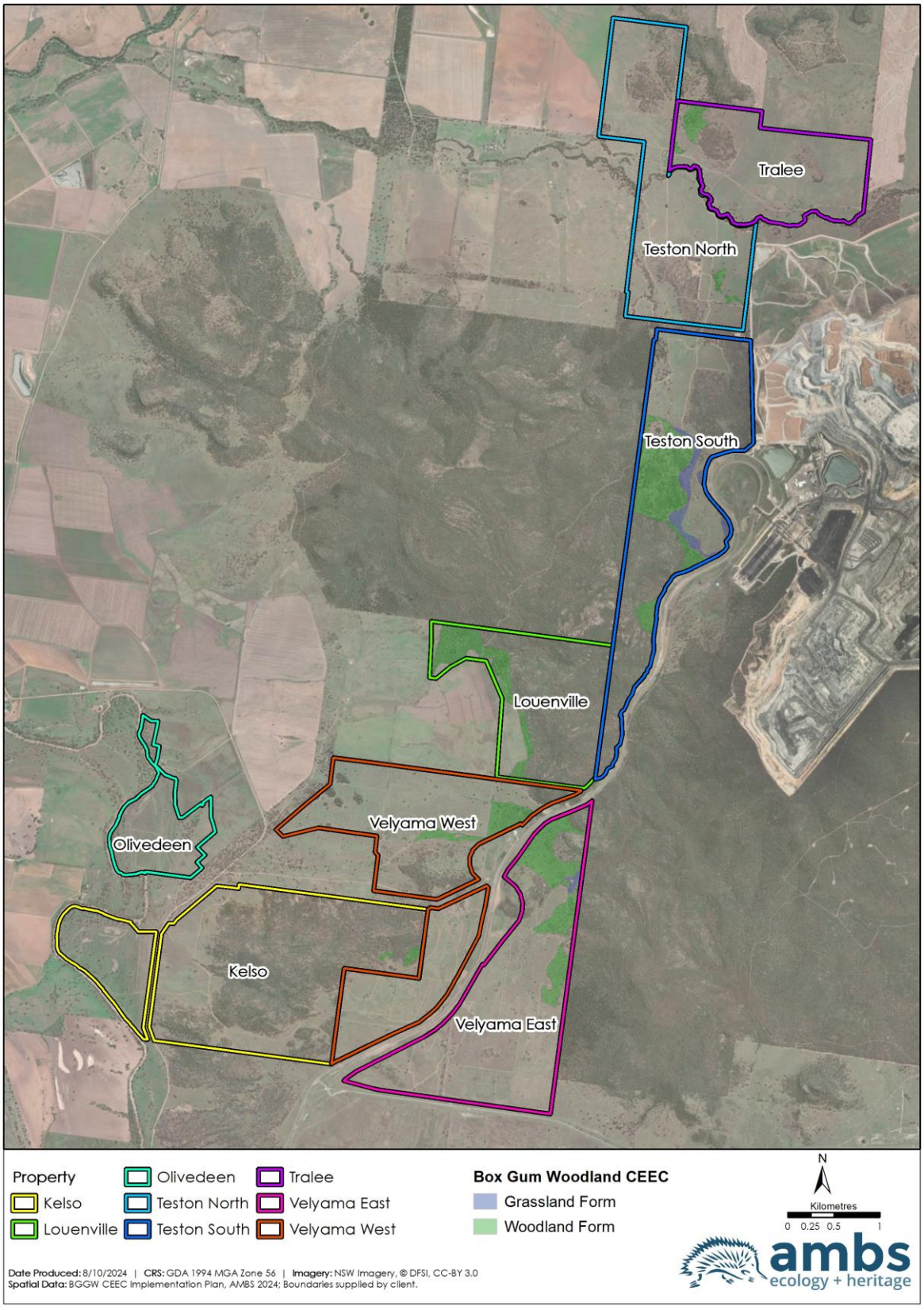

Figure 1.1 Location of Box Gum Woodland CEEC across the MCCM Offset Areas from Olivedeen, Kelso, Velyama, Louenville, Teston South and Teston North

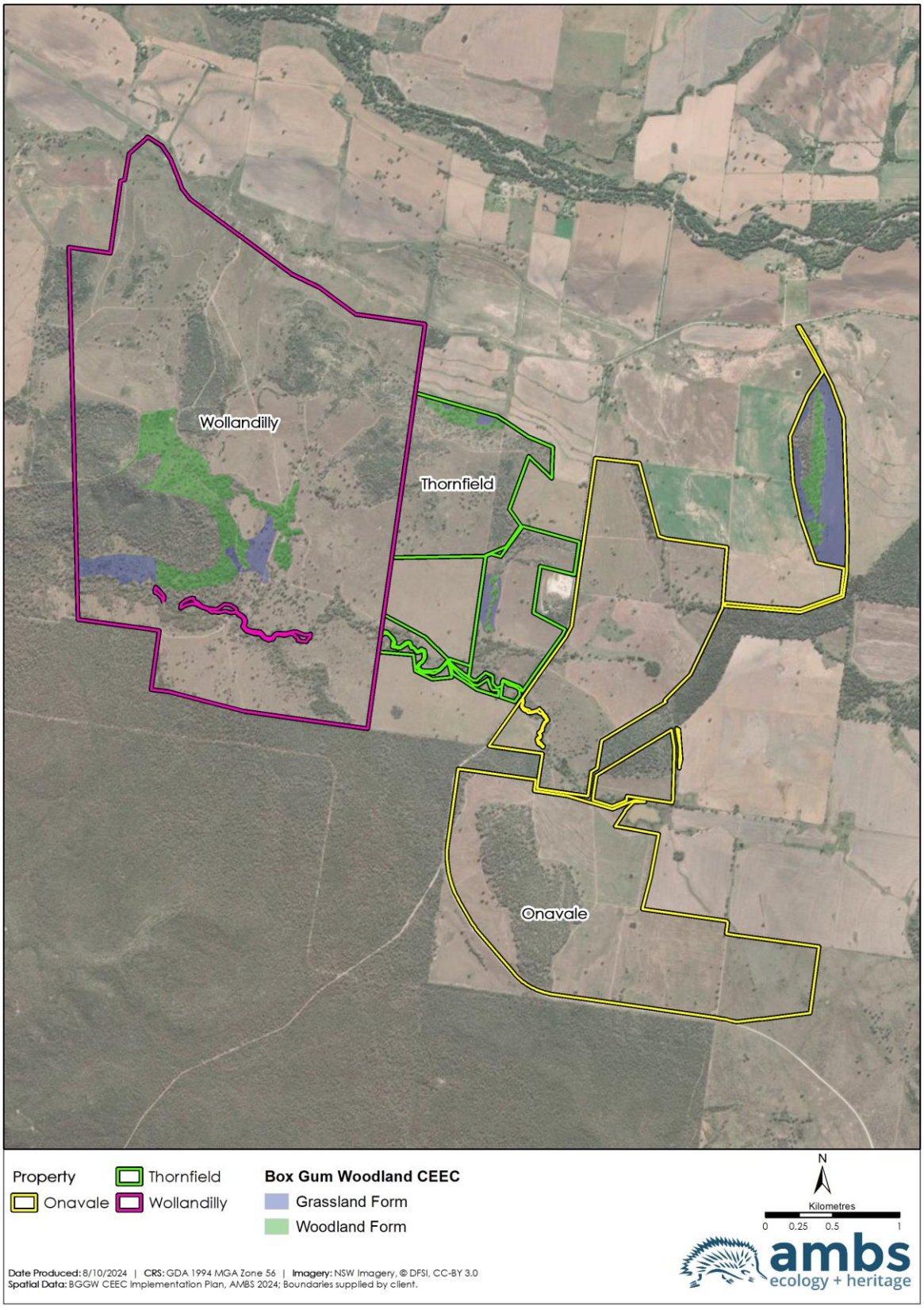

Figure 1.2 Location of Box Gum Woodland CEEC across the MCCM Offset Areas Wollandilly, Thornfield and Onavale

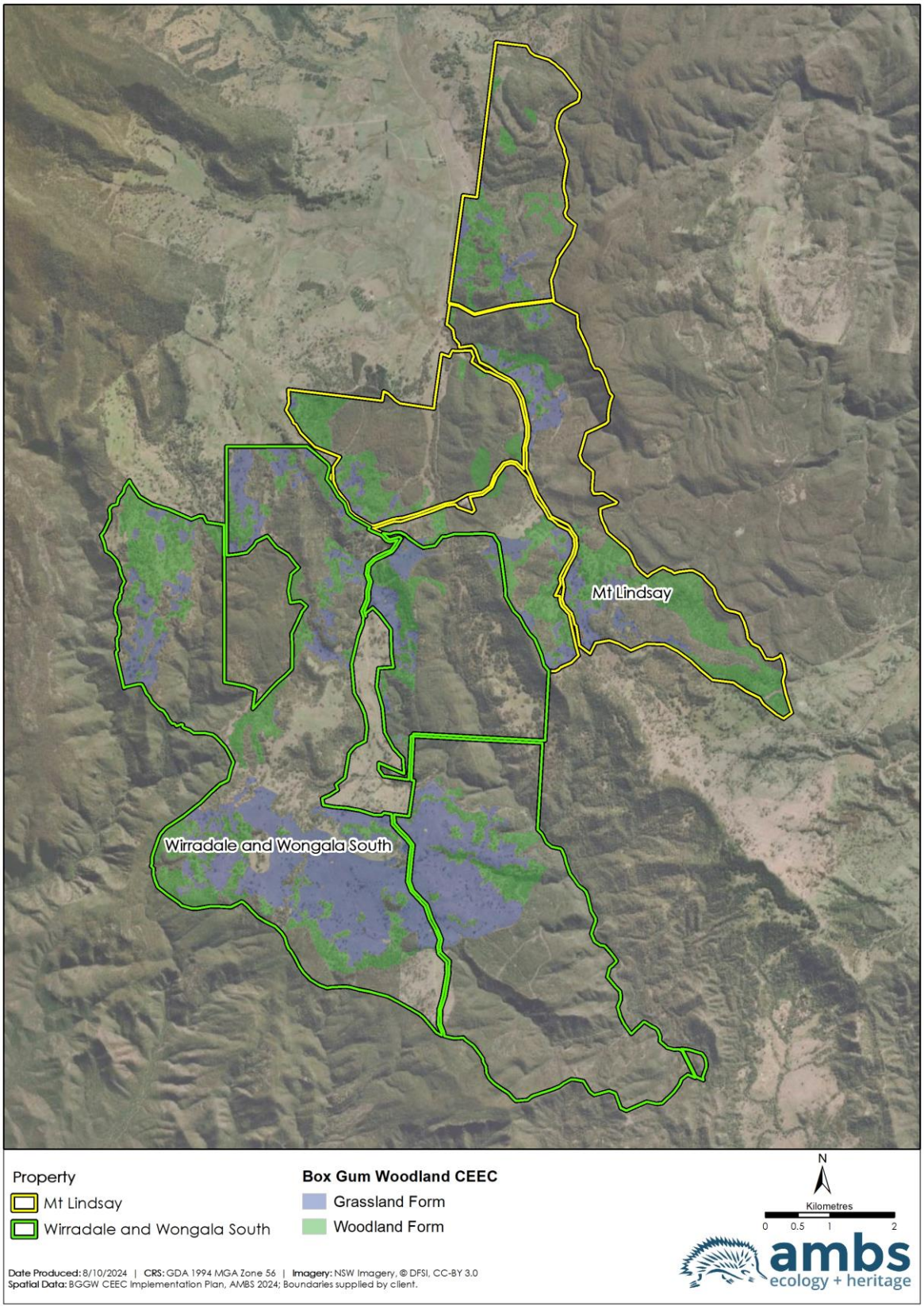

Figure 1.3 Location of Box Gum Woodland CEEC across the MCCM Offset Areas Mt Lindesay and Wirradale/Wongala South

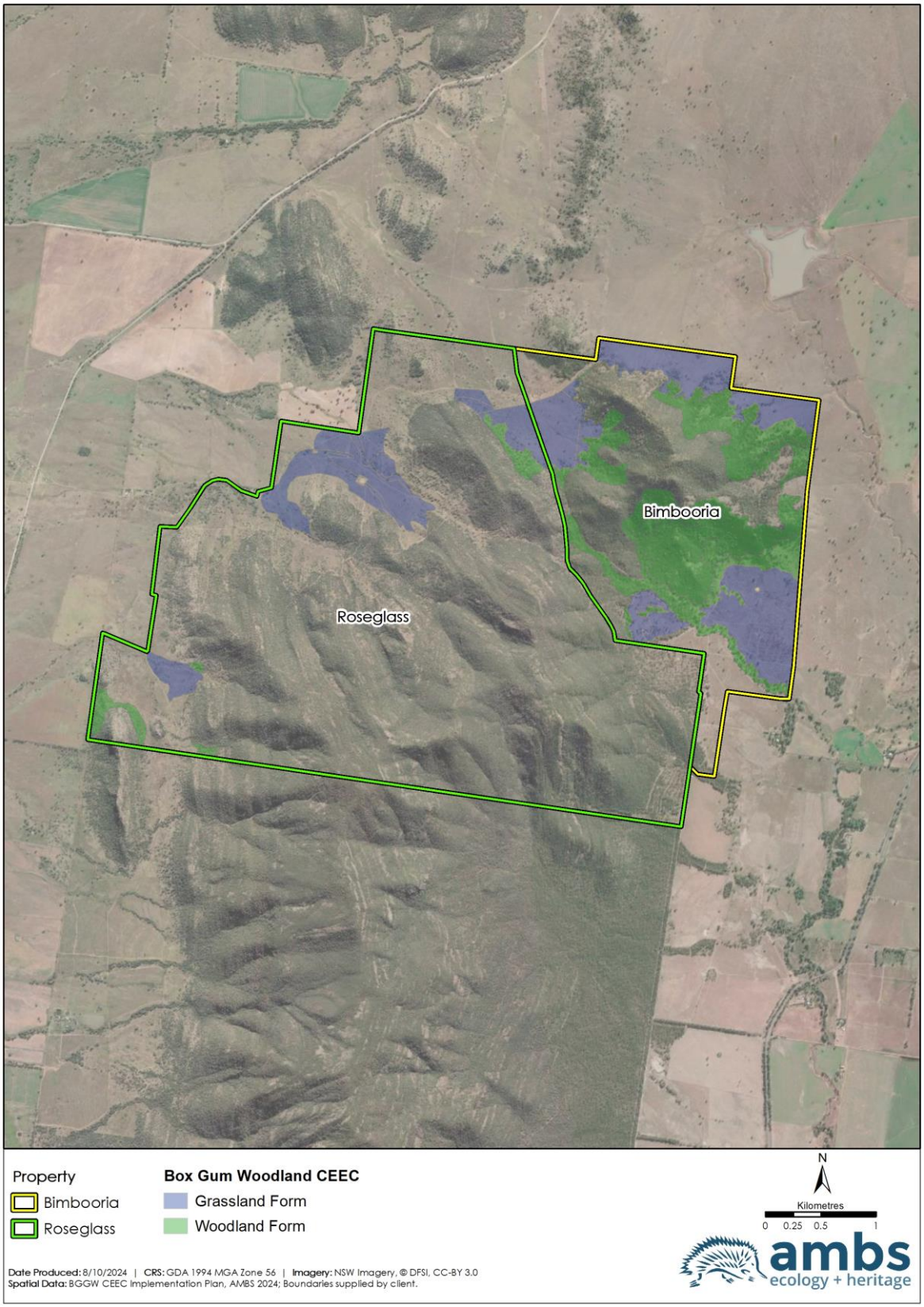

Figure 1.4 Location of Box Gum Woodland CEEC across the MCCM Offset Areas Roseglass and Bimbooria

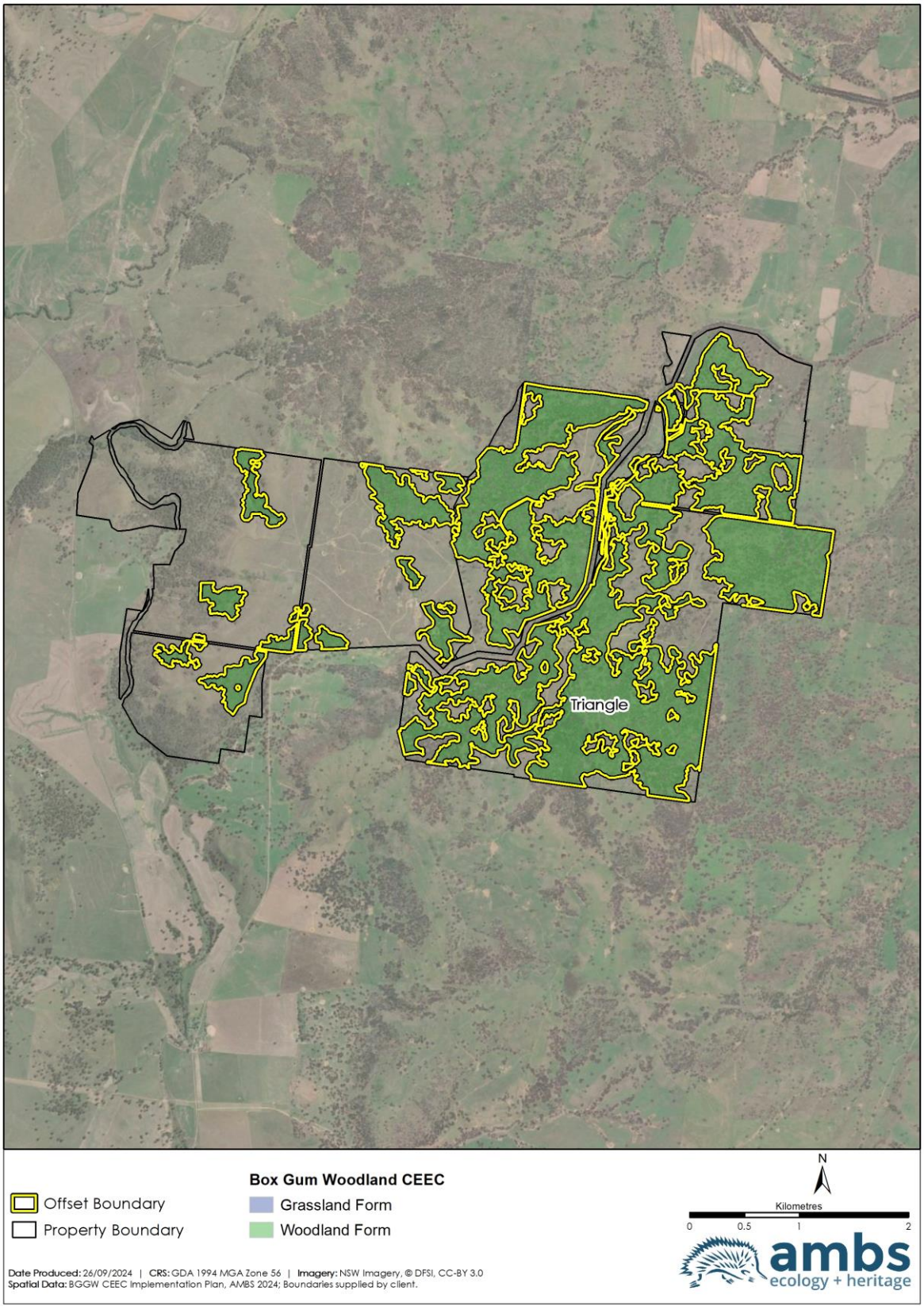

Figure 1.5 Location of Box Gum Woodland CEEC across the MCCM Offset Area Triangle

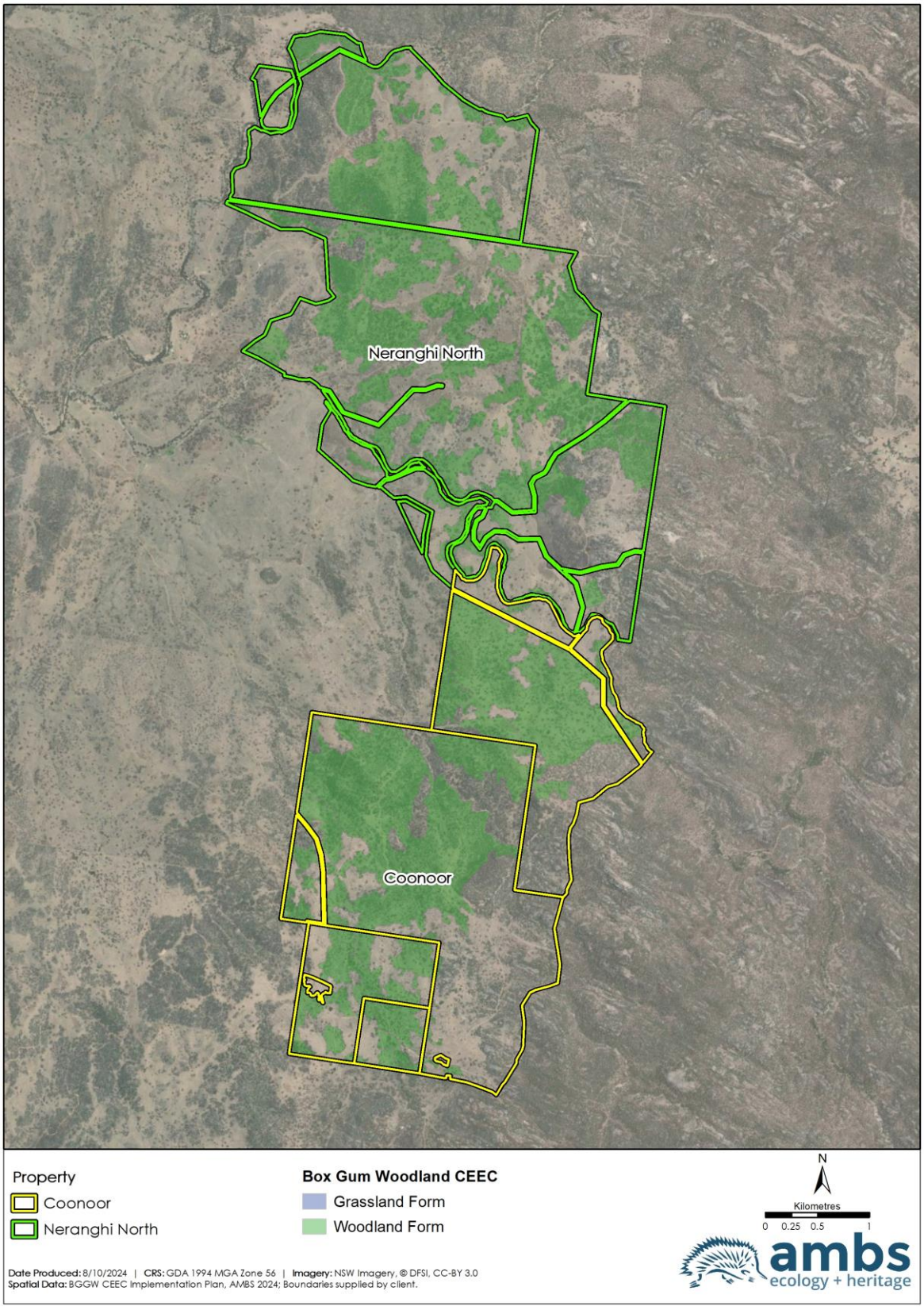

Figure 1.6 Location of Box Gum Woodland CEEC across the MCCM Offset Areas Neranghi North and Coonoor

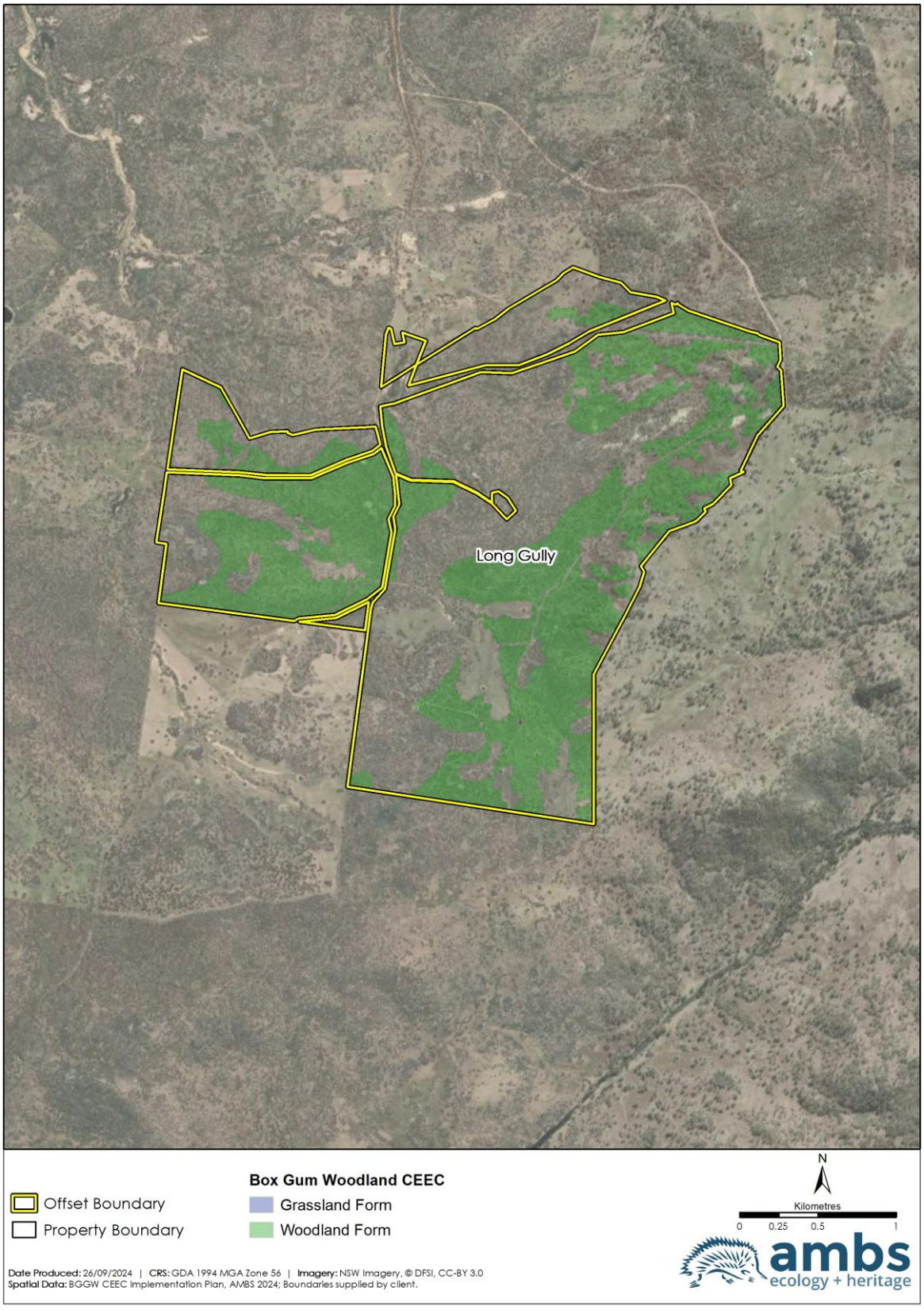

Figure 1.7 Location of Box Gum Woodland CEEC across the MCCM Offset Area Long Gully

1.4 Relevant Conditions of Approval

The EECIP 2015 was developed in response to conditions of the NSW Project Approval 10_0138 granted under the Environmental Planning and Assessment Act 1979 (Schedule 3 Condition 48). The following conditions outline the key considerations for the development of the EECIP as outlined in NSW and Commonwealth Approvals:

- Condition 44 of Schedule 3 PA 10_0138 provides for:
    a) protection and enhancement of 4,114 ha Box Gum Woodland CEEC (Woodland Form)
    b) protection and enhancement of 1,518 ha BGGW CEEC (Derived Native Grassland Form)

- Condition 48 of Schedule 3 PA 10_0138:
  For the White Box – Yellow Box – Blakely's Red Gum Grassy Woodland Endangered Ecological Community the Applicant must:
    a) ensure that the Biodiversity Offset Strategy and site Rehabilitation Strategy is focused on protection rehabilitation, reestablishment and long-term maintenance of viable stands of this community;
    b) investigate in consultation with BCS and the North West LLS, all factors likely to enhance or impede the effective long term restoration of degraded remnants of this EEC in Offset Areas or regeneration of this EEC on disturbed areas (both Offset Areas and the site);
    c) within 24 months of the date of this approval (and if possible, in conjunction with Stage 2 of the Leard Forest Mining Precinct Regional Biodiversity Strategy), submit a report of this investigation and provide an implementation plan to maximise the prospects for rehabilitation and regeneration of this EEC on the Offset Areas and the site, for approval by the Planning Secretary; and
    d) incorporate the approved implementation plan into the revised Biodiversity Management Plan, required under condition 52.

- Condition 9 and 9b of EPBC Approval 2010/5566:
  The person taking the action must register legally binding conservation covenants over Offset Areas containing, to the satisfaction of the Minister, no less than:
    b) 5,532 ha of the White Box—Yellow Box—Blakely's Red Gum Grassy Woodland and Derived Native Grassland critically endangered ecological community, that must be managed to achieve equivalent or better quality.

  Note: the 5,532 ha of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland critically endangered ecological community may be included within the 9,334 ha of Offset Areas for the threatened species if it meets the listing criteria for the EPBC-listed critically endangered ecological community as defined in the EPBC listing advice for that community and the requirements of condition 9.

Modification 9 to PA 10_0138 has not altered the intent of Condition 48. However, it formalises the revision of the MCCM BOS and specifically the inclusion of Long Gully, Coonoor, Neranghi North, Thornfield and Triangle referred to collectively as the "Additional Offset Areas" while the other Offset Areas will be collectively known as the "Existing Offset Areas" as part of the overall MCCM Offset Areas thus this supplementary report updates relevant implementation information to support changes to the MCCM BOS since the original EECIP 2015 was approved.

2 Status of the Implementation Plan Actions

WHC employs various approaches to protecting and enhancing Box Gum Woodland CEEC. Management actions will be informed by this Supplementary Report and described in the revised MCCM BMP (WHC 2024) to maximise the prospects for regeneration of Box Gum Woodland CEEC. The efficacy of this approach is continually evaluated by a variety of monitoring programs and targeted assessments.

The original EECIP 2015 describes 52 individual actions grouped into eleven broad factors (Table 4 EECIP, 2015) for restoration and improvement in the condition of Box Gum Woodland CEEC across MCCM Offset Areas. Table 2.1 provides an overview of the status of these 52 management actions which inform the revised MCCM BMP (WHC 2024) as well as describing additional actions added to supplement the revised MCCM BMP. A number of actions have been completed, are still ongoing or still ongoing but with minor revision as per the original EECIP (2015), and no further information is provided in this document. The following sections of this document will provide further detail on those actions that are no longer required, have been updated or added to the EECIP as part of the revised MCCM BMP 2024.

Table 2.1 Summary of management actions described in the Original EECIP 2015 and updates including their status to inform the revised MCCM BMP.

Item Number	Implementing the Biodiversity Offset Strategy in the BMP (Table 4 Whitehaven 2015b)	Status to inform revised MCCM BMP 2024
	Planning	
1	The BMP will define the objectives for the Box-Gum Woodland EEC.	Actions are still ongoing, with revisions Describe Ecological Management Objectives including for Box-Gum Woodland CEEC. • **See Section 2.1. below**
2	The BMP will discuss an adaptive management framework and monitoring programme for the management of the Box-Gum Woodland EEC.	Actions are still ongoing, with minor revisions Describe Performance and Completion Criteria for Box-Gum Woodland CEEC and outline the flora monitoring program being implemented to measure against Box Gum Woodland CEEC criteria
3	The BMP will include a visual inspection of each mapped vegetation management unit in each Offset Area to identify constraints and requirements for specific management measures.	Actions are still ongoing, with minor revisions General observations on vegetation and habitat outside monitoring sites will be made annually. Routine seed assessment programs designed to identify, on a seasonal basis, the best strategy to collect seeds for future revegetation programs. Annual revegetation assessments is undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Seasonal weed assessment programs will be undertaken across the Offset Areas to identify weed species, extent and condition of any infestations and the opportunity for control/management depending on seasonal conditions. Both the overall management and targeted programs will be planned using data collected from a grid-based motion detection camera monitoring program, pest animal observations and the results of previous control programs.
4	The BMP will describe targeted revegetation along drainage lines and scalded areas to minimise risk of erosion.	Actions are still ongoing, with minor revisions Primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only subject to maintenance revegetation activities as determined by annual revegetation assessments.
5	The BMP will aim to maximise the re-use of existing infrastructure (e.g. access roads) instead of creating new infrastructure.	Actions are still ongoing, with minor revisions Existing infrastructure (such as electricity transmission lines, windmills/water bores and pipes, homesteads and sheds) wholly or partly within the Offset Areas will be retained and managed as required by the relevant owners and/or managers/licensees. Any remaining derelict assets/infrastructure items will continue to be assessed and if no longer required, will be progressively removed overtime and remediated as required.
6	The BMP will aim to locate new Offset Area management infrastructure (e.g. access roads) preferentially in cleared land.	Actions are still ongoing, with minor revisions

Item Number	Implementing the Biodiversity Offset Strategy in the BMP (Table 4 Whitehaven 2015b)	Status to inform revised MCCM BMP 2024
		New infrastructure will be located, if required, in consideration of biodiversity (such as threatened species) and heritage constraints, and due diligence inspections will be undertaken prior to any disturbance in consideration the limits specified in Conservation Agreements
7	The BMP will aim to locate new Offset Area management infrastructure (e.g. access roads) in stable locations.	Actions are still ongoing, with minor revisions New infrastructure will be located, if required, in consideration of biodiversity (such as threatened species) and heritage constraints, and due diligence inspections will be undertaken prior to any disturbance in consideration the limits specified in Conservation Agreements
8	The BMP will describe provision of fencing and signage around the perimeter of the Offset Areas to manage livestock and avoid accidental clearance.	Actions are still ongoing, with minor revisions Agricultural production and livestock grazing is currently excluded from the Offset Areas. Any inadvertent grazing from stray neighbouring stock will be removed as soon as practicable. Fence lines are to be located on or adjacent to the actual Offset Area wherever practicable in consideration of biodiversity (such as threatened species) and heritage constraints. Maintenance and new fences will be constructed in consideration of Conservation Agreements which limits total clearing to 6 m total width. The use of existing fences will be maximised in the first instance as the Offset Area boundary, to reduce additional disturbance. This will secure the Offset Area by minimising the likelihood of inadvertent grazing, unauthorised disturbance, or unauthorised access into the Offset Area. If inspections note that any fences are causing impacts to the flight paths of birds, bats and gliders, alternatives to barbed wire fencing will be considered. Where Offset Areas share common boundaries, fencing designs will not be restrictive to native fauna movement or connectivity between habitats. Wherever the need to restrict livestock is not required, new fencing will be plain strand wire fencing to minimise the use of barbed wire.
9	The BMP will describe roles for suitability qualified personnel (e.g. restoration ecologist to provide direction about the rehabilitation and restoration of the Box-Gum Woodland EEC).	Actions are still ongoing, with minor revisions Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only subject to maintenance revegetation activities as determined by annual revegetation assessments. A total of 3,126 ha has been actively planted with new plantings since 2016 in the Offset Areas.
	Soil Testing and Nutrient Management	
10	The BMP will provide for soil testing to be undertaken on soils in revegetation areas to identify issues with physical and chemical characteristics as well as determine amelioration requirements and rates.	Actions are still ongoing, with revisions Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only subject to maintenance revegetation activities as determined by annual revegetation assessments. A total of 3,126 ha has been actively planted with new plantings since 2016 in the Offset Areas. Soil testing no longer required.

Item Number	Implementing the Biodiversity Offset Strategy in the BMP (Table 4 Whitehaven 2015b)	Status to inform revised MCCM BMP 2024
		• **See Section 2.2 below**
11	The BMP will describe the following nutrient reduction options and the relevant situations where they would be applied: - crash grazing periodically to remove nutrients locked in weeds; - restriction of livestock access to limit further nutrient enrichment; and - controlled burns.	Actions are still ongoing, with revisions Agricultural production and livestock grazing is currently excluded from the Offset Areas. Any inadvertent grazing from stray neighbouring stock will be removed as soon as practicable. Crash grazing is no longer required. Controlled burns have been replaced with ecological burns in BMP. • **See Section 2.6 below**
	Surface Preparation	
12	The BMP will describe site preparation in cleared land (e.g. ripping or use of spiked rollers) and (where relevant) in derived grassland (e.g. use of spiked rollers) to reduce soil compaction impacting the success of the revegetation.	Actions are still ongoing, with revisions Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only subject to maintenance revegetation activities as determined by annual revegetation assessments. A total of 3,126 ha has been actively planted with new plantings since 2016 in the Offset Areas. Reducing soil compaction is no longer required. • **See Section 2.3 below**
13	The BMP will restrict the use of revegetation techniques that involve high level of physical disturbance in existing Box-Gum Woodland and derived grasslands.	Actions are still ongoing, with revisions Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only subject to maintenance revegetation activities as determined by annual revegetation assessments. A total of 3,126 ha has been actively planted with new plantings since 2016 in the Offset Areas. Restricting revegetation techniques is no longer required. • **See Section 2.3 below**
	Revegetation, Seeds and Tube Stock	
14	The BMP will describe a seed and tube stock supply strategy including calculation of the amount and species of seed and tube stock required each year and how the seed and tube stock will be sourced and managed to meet the demand.	Actions are still ongoing, with revisions. Routine seed assessment programs designed to identify, on a seasonal basis, the best strategy to collect seeds for future revegetation programs. Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only

Item Number	Implementing the Biodiversity Offset Strategy in the BMP (Table 4 Whitehaven 2015b)	Status to inform revised MCCM BMP 2024
		subject to maintenance revegetation activities as determined by annual revegetation assessments. A total of 3,126 ha has been actively planted with new plantings since 2016 in the Offset Areas. An indicative revegetation species list is outline in the BMP. • **See Section 2.4 below**
15	The BMP will describe procedures for strategic and long term seed collection, management (including pre-treatment) and storage following the relevant Florabank guidelines. The BMP will describe procedures for sowing seed (e.g. appropriate sowing depths).	Actions are still ongoing, with revisions. Routine seed assessment programs designed to identify, on a seasonal basis, the best strategy to collect seeds for future revegetation programs. Seed collection, management and storage will be undertaken in consideration of Greening Australia (various dates) Florabank Guidelines and Conservation Agreement limitations and permissions. Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only subject to maintenance revegetation activities as determined by annual revegetation assessments. A total of 3,126 ha has been actively planted with new plantings since 2016 in the Offset Areas. An indicative revegetation species list is outline in the BMP. • **See Section 2.4 below**
16	The BMP will favour natural regeneration in the derived grasslands and woodland areas over seeding or planting in the first instance followed by seeding or planting if required.	Actions are still ongoing, with revisions. Natural regeneration will be favoured over planting or direct seeding in areas of native woodland/forest and derived native grassland (moderate to good condition) because natural regeneration conserves the natural genetic diversity of the local vegetation. Annual revegetation assessments for active revegetation (direct seeding and/or seedling planting) will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only subject to maintenance revegetation activities as determined by annual revegetation assessments. A total of 3,126 ha has been actively planted with new plantings since 2016 in the Offset Areas. An indicative revegetation species list is outline in the BMP. • **See Section 2.4 below**
17	The RMP will provide for the preferential use of local endemic (adapted) species, however consideration would be given to the use of a high quality seed source further from the site over a low quality more local seed source.	Actions are still ongoing, with revisions. Routine seed assessment programs designed to identify, on a seasonal basis, the best strategy to collect seeds for future revegetation programs. Seed collection, management and storage will be undertaken in consideration of Greening Australia (various dates) Florabank Guidelines and Conservation Agreement limitations and permissions. • **See Section 2.4 below**

Item Number	Implementing the Biodiversity Offset Strategy in the BMP (Table 4 Whitehaven 2015b)	Status to inform revised MCCM BMP 2024
18	The BMP will provide application rates for seeds as well as planting densities for tube stock to avoid excessive shading.	Actions are still ongoing, with revisions. Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only subject to maintenance revegetation activities as determined by annual revegetation assessments. A total of 3,126 ha has been actively planted with new plantings since 2016 in the Offset Areas. An indicative revegetation species list is outline in the BMP. • **See Section 2.4 below**
19	The BMP will focus on increasing woodland patch size within the Offset Area and aim to enhance ecological connectivity.	Actions are still ongoing, with revisions. Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only subject to maintenance revegetation activities as determined by annual revegetation assessments. A total of 3,126 ha has been actively planted with new plantings since 2016 in the Offset Areas. An indicative revegetation species list is outline in the BMP. • **See Section 2.4 below**
20	The BMP will describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, midsized shrubs and tall trees to create structurally diverse habitat.	Actions are still ongoing, with revisions. Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only subject to maintenance revegetation activities as determined by annual revegetation assessments. A total of 3,126 ha has been actively planted with new plantings since 2016 in the Offset Areas. An indicative revegetation species list is outline in the BMP. • **See Section 2.4 below**
21	The BMP include sowing of Kangaroo Grass (as this species is known to out-compete annual grass weeds and provide inter tussock spaces for a diversity of ground cover species [e.g. wildflowers]).	Actions are still ongoing, with revisions. Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only subject to maintenance revegetation activities as determined by annual revegetation assessments. A total of 3,126 ha has been actively planted with new plantings since 2016 in the Offset Areas. An indicative revegetation species list is outline in the BMP. Flora species typically used in areas under active revegetation include a variety of grasses, herbs, forbs, shrubs and trees (including species associated with

Item Number	Implementing the Biodiversity Offset Strategy in the BMP (Table 4 Whitehaven 2015b)	Status to inform revised MCCM BMP 2024
		Box-Gum Woodland CEEC such as Kangaroo Grass (*Themeda triandra*) to create a structurally diverse habitat (for the Regent Honeyeater, S*wift Parrot*, Corben's Long-eared Bat and *Tylophora linearis*). • **See Section 2.4 below**
22	The BMP will aim to include a wide diversity of species in the seed mix.	Actions are still ongoing, with revisions. Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only subject to maintenance revegetation activities as determined by annual revegetation assessments. A total of 3,126 ha has been actively planted with new plantings since 2016 in the Offset Areas. . An indicative revegetation species list is outline in the BMP. • **See Section 2.4 below**
23	The BMP will include provision to review the need for kangaroo control measures.	Actions are still ongoing, with revisions. Native grazers that potentially inhibit restoration/revegetation (e.g. kangaroos) will be recorded. If grazing kangaroos are determined to be overabundant, the need for kangaroo control measures will be reviewed. Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland as well as consideration of other ancillary items (i.e. tree guards to protect plants from grazing kangaroos) that are going to be needed to optimise revegetation success and growth/development of seedlings and seeding areas. • **See Section 2.4 below**
New Action	Annual revegetation assessments	Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. • **See Section 2.4 below**
New Action	Implement trigger action response plan for flora monitoring	Describe Performance and Completion Criteria for Box-Gum Woodland CEEC and outline the flora monitoring program being implemented to measure against Box Gum Woodland CEEC criteria. Annual flora performance criteria (Section 5.16 and Appendix I) established interim yearly targets for tracking change in condition and activating management response. The BMP outlines the Offset Areas Trigger, Action, Response Plan (TARP) which provides trigger points for contingency measures (corrective actions/response) to be implemented if the flora monitoring program identifies that the annual performance criteria are not being met. Contingency measures may not be limited to those listed in the BMP and will only be implemented if in accordance with the relevant Conservation Agreements. • **See Section 2.4 below**
	Maintenance	

Item Number	Implementing the Biodiversity Offset Strategy in the BMP (Table 4 Whitehaven 2015b)	Status to inform revised MCCM BMP 2024
24	The BMP will include provision to assess vegetation density and undertake ecological thinning (e.g. through selective clearance or fire) if necessary.	Actions are still ongoing, with minor revisions. Ecological thinning will only be considered in habitats identified as having dense regrowth, in particular *Callitris* species. MCC will undertake ecological thinning assessments to identify across the Offset Areas where dense regrowth is impacting on flora and fauna habitat condition or is detrimental to natural regeneration/ecological restoration. If determined that ecological thinning is required; it will be staged reflective of existing flora and fauna habitat condition in consideration of Conservation Agreement conditions.
25	The BMP will provide measures to improve understorey diversity (e.g. replanting, causing disturbance through fire or grazing).	Actions are still ongoing, with revisions. Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Agricultural production and livestock grazing is currently excluded from the Offset Areas. Any inadvertent grazing from stray neighbouring stock will be removed as soon as practicable. Crash grazing is no longer required. • **See Section 2.4 below**
26	The BMP will provide for selective use of slow-release native plant fertiliser to promote plant growth (if required).	Actions are still ongoing, with revisions. Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. Use of slow-release native plant fertilizer no longer required. • **See Section 2.4 and Section 2.5 below**
27	The RMP and BMP will provide an option for using tree guards to protect young seedlings from browsing or grazing native animals.	Actions are still ongoing, with revisions. Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland as well as consideration of other ancillary items (i.e. tree guards to protect plants from grazing kangaroos) that are going to be needed to optimise revegetation success and growth/development of seedlings and seeding areas. • **See Section 2.4 below**
28	The BMP will describe how the growth and survival of the vegetation sown or planted will be monitored.	Actions are still ongoing, with revisions. Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation. • **See Section 2.4 below**
29	The BMP will include hygiene protocols to minimise the risk of plant diseases (i.e. restricting site access).	Actions are still ongoing, with minor revisions. The spread and introduction of weeds can be prevented by the practice of weed hygiene measures. MCC will instruct contractor vehicles and equipment entering the Offset Areas to be clean and free from weeds and/or seeds.

Item Number	Implementing the Biodiversity Offset Strategy in the BMP (Table 4 Whitehaven 2015b)	Status to inform revised MCCM BMP 2024
		Visitor impacts will be managed such that disturbance to the Offset Areas is minimised. Visitors must keep to designated tracks and trails except for management purposes, and equipment entering the area must be clean from weeds and/or seeds.
30	The BMP will describe a restriction of clearing (unless for ecological thinning, maintenance or access for monitoring).	Actions are still ongoing, with minor revisions. Existing infrastructure (such as electricity transmission lines, windmills/water bores and pipes, homesteads and sheds) wholly or partly within the Offset Areas will be retained and managed as required by the relevant owners and/or managers/licensees. New infrastructure will be located, if required, in consideration of biodiversity (such as threatened species) and heritage constraints, and due diligence inspections will be undertaken prior to any disturbance in consideration the limits specified in Conservation Agreements.
	Habitat Features	
31	The BMP will describe procedures to reuse bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).	Actions are still ongoing, with minor revisions. Habitat augmentation using salvaged resources (including from the MCCM site where possible) or nest boxes will be undertaken in Offset Areas with habitats identified as having low habitat resources. MCC will undertake habitat needs assessments to identify across the Offset Areas where low habitat resources are to determine what habitat augmentation is required. Habitat augmentation will be staged reflective of existing fauna habitat condition and will utilise available salvaged resources such as coarse woody debris, rocky debris (bush rocks) and artificial hollows (including nest boxes) in consideration of Conservation Agreement conditions.
32	The BMP will describe procedures to reuse timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in select trees without hollows.	Actions are still ongoing, with minor revisions. Habitat augmentation using salvaged resources (including from the MCCM site where possible) or nest boxes will be undertaken in Offset Areas with habitats identified as having low habitat resources. MCC will undertake habitat needs assessments to identify across the Offset Areas where low habitat resources are to determine what habitat augmentation is required. Habitat augmentation will be staged reflective of existing fauna habitat condition and will utilise available salvaged resources such as coarse woody debris, rocky debris (bush rocks) and artificial hollows (including nest boxes) in consideration of Conservation Agreement conditions.
33	The BMP will not permit firewood collection.	Actions are still ongoing, with minor revisions. Firewood collection will not be permitted unless in accordance with Conservation Agreements.
	Grazing Management	
34	The BMP will describe restriction of livestock access to erosion prone areas (e.g. along watercourses).	Actions are still ongoing, with revisions Agricultural production and livestock grazing is currently excluded from the Offset Areas. Any inadvertent grazing from stray neighbouring stock will be removed as soon as practicable. Restricting grazing is no longer required. • **See Section 2.6 below**

Item Number	Implementing the Biodiversity Offset Strategy in the BMP (Table 4 Whitehaven 2015b)	Status to inform revised MCCM BMP 2024
35	The BMP will describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).	Actions are still ongoing, with revisions Agricultural production and livestock grazing is currently excluded from the Offset Areas. Any inadvertent grazing from stray neighbouring stock will be removed as soon as practicable. Restricting grazing is no longer required. • **See Section 2.6 below**
36	The BMP will describe restriction of livestock access to areas not already subject to grazing.	Actions are still ongoing, with revisions Agricultural production and livestock grazing is currently excluded from the Offset Areas. Any inadvertent grazing from stray neighbouring stock will be removed as soon as practicable. Restricting grazing is no longer required. • **See Section 2.6 below**
37	The BMP will describe management of livestock to maintain ground cover and diversity of native plants.	Actions are still ongoing, with revisions Agricultural production and livestock grazing is currently excluded from the Offset Areas. Any inadvertent grazing from stray neighbouring stock will be removed as soon as practicable. Grazing is no longer required. • **See Section 2.6 below**
38	The BMP will describe restriction of livestock access to protect plants that are known to be sensitive to grazing.	Actions are still ongoing, with revisions Agricultural production and livestock grazing is currently excluded from the Offset Areas. Any inadvertent grazing from stray neighbouring stock will be removed as soon as practicable. Restricting grazing is no longer required. • **See Section 2.6 below**
39	The BMP will include provision to lightly graze derived grasslands in times of suitable climatic conditions for weed growth (e.g. autumn and/or winter) to reduce vigour of annual grass weeds.	Actions are still ongoing, with revisions Agricultural production and livestock grazing is currently excluded from the Offset Areas. Any inadvertent grazing from stray neighbouring stock will be removed as soon as practicable. Grazing is no longer required. • **See Section 2.6 below**
40	The BMP will provide a mechanism to reduce livestock grazing during drought periods.	Actions are still ongoing, with revisions Agricultural production and livestock grazing is currently excluded from the Offset Areas. Any inadvertent grazing from stray neighbouring stock will be removed as soon as practicable. Grazing is no longer required. • **See Section 2.6 below**
41	The BMP will describe the following controlled grazing management options and the relevant situations where they would be applied: - Rotational grazing system to promote and maintain native plant diversity and cover. - Removal of grazing livestock.	Actions are still ongoing, with revisions Agricultural production and livestock grazing is currently excluded from the Offset Areas. Any inadvertent grazing from stray neighbouring stock will be removed as soon as practicable. Grazing is no longer required. • **See Section 2.6 below**

Item Number	Implementing the Biodiversity Offset Strategy in the BMP (Table 4 Whitehaven 2015b)	Status to inform revised MCCM BMP 2024
	Weed Management	
42	The BMP will provide the following weed management options and the relevant situations where they would be applied: • Crash grazing periodically to reduce annual and perennial grass weeds. • Nutrient management (e.g. exclusion of grazing livestock which add nutrients). • Controlled burns during spring to reduce annual and perennial grass weeds (not broadleaf exotics). • Physical removal (e.g. removing weeds by felling or pulling). • Targeted and timely herbicide application.	Actions are still ongoing, with minor revisions A number of environmental and priority weeds are known to occur in the Offset Areas that are a legacy inherited from previous owners' management regimes. Based on seasonal weed assessment results; weed control will take place targeting the listed priority weeds and any other environmental weeds present in the Offset Areas. If new weeds species are found, those new weeds species will be managed in accordance with the measures described in the BMP. Recommended techniques for removal of priority weeds that have been published by DPI will be consulted prior to weed control, e.g. New South Wales Weed Control Handbook (DPI, 2018a). Relevant methods for controlling priority weeds known to occur in the Offset Areas are summarised in the BMP. • **See Section 2.7 below**
43	The BMP will provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).	Actions are still ongoing, with minor revisions A number of environmental and priority weeds are known to occur in the Offset Areas that are a legacy inherited from previous owners' management regimes. Based on seasonal weed assessment results; weed control will take place targeting the listed priority weeds and any other environmental weeds present in the Offset Areas. If new weeds species are found, those new weeds species will be managed in accordance with the measures described in the BMP. Recommended techniques for removal of priority weeds that have been published by DPI will be consulted prior to weed control, e.g. New South Wales Weed Control Handbook (DPI, 2018a). Relevant methods for controlling priority weeds known to occur in the Offset Areas are summarised in the BMP. • **See Section 2.7 below**
New Action	Seasonal weed assessment	Seasonal weed assessment programs will be undertaken across the Offset Areas to identify weed species, extent and condition of any infestations, and the opportunity for control/management depending on seasonal conditions. The weed assessments will ensure that timely and prioritised weed control is undertaken on a seasonal basis. Information will be given to contractors to identify what, where, when and how to target appropriate resources across the Offset Areas for weed control. • **See Section 2.7 below**
	Feral Animal Management	
44	The BMP will describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).	Actions are still ongoing with revision A standardised rolling monitoring program for pest animals has been implemented across the Offset Areas. • **See Section 2.8 below**
45	The BMP will provide monitoring of deer and feral cats and control (if required).	Actions are still ongoing with revision A standardised rolling monitoring program for pest animals has been implemented across the Offset Areas. • **See Section 2.8 below**

Item Number	Implementing the Biodiversity Offset Strategy in the BMP (Table 4 Whitehaven 2015b)	Status to inform revised MCCM BMP 2024
New Action	Implement standardised rolling monitoring program for pest animals	Implement routinely scheduled rolling monitoring and control programs across the offset areas. • **See Section 2.8 below**
	Fire Management	
46	The BMP will describe measures to prevent fires such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken whilst vegetation is establishing).	Actions are still ongoing Fire breaks to be established and maintained (using access tracks/fire trails) around the perimeter of and internally within offset areas (where practicable) to passively mitigate fire spreading onto or off the offset property, as well as for active ecological burning and bushfire containment purposes, in consideration of Conservation Agreement conditions. Fire breaks will be periodically maintained as zero fuel barriers (preferably mineral earth barriers up to 6 m total width of clearing); acknowledging that some fuel accumulation will occur in between maintenance. Fire breaks will be inspected annually prior to the fire season and the maintenance of fire breaks will be prioritised as required by the inspection.
47	The BMP will prescribe any controlled burns in patches of Box-Gum Woodland EEC (existing woodland) to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors.	Actions are still ongoing An annual ecological burn program will be undertaken within the feasible paddocks/burn blocks identified through the above assessment within the prioritised offset areas. The burn program will be conducted by suitably experienced and capable professionals with adequate firefighting resources and training to safely and competently light and extinguish ecological burns. The location of ecological burns will consider existing fire intervals (in consideration of NSW RFS Bush Fire Coordinating Committee [2008] Bushfire Fire Risk Management Guideline intervals for grassy woodlands of 8 to 40 years; grasslands of 3 to 10 years; and dry sclerophyll forest shrub/grass sub-formation of 8 to 50 years) within non-woody (any areas considered with revegetation will be sufficiently mature to avoided fire impacts) and woody (existing remnant vegetation) areas, in consideration of Conservation Agreement conditions. Ecological burns will aim for low to moderate fire intensity burns by undertaking cool-season burns when conditions are suitable (generally autumn to spring), as well as undertaking other burn preparations to mitigate impacts to environmental assets (such as hollow bearing trees) and other constraints identified within mapped burn blocks.
48	The BMP will schedule for maintenance of fire breaks and fire trails.	Actions are still ongoing Fire breaks to be established and maintained (using access tracks/fire trails) around the perimeter of and internally within offset areas (where practicable) to passively mitigate fire spreading onto or off the offset property, as well as for active ecological burning and bushfire containment purposes, in consideration of Conservation Agreement conditions. Fire breaks will be periodically maintained as zero fuel barriers (preferably mineral earth barriers up to 6 m total width of clearing); acknowledging that some fuel accumulation will occur in between maintenance. Fire breaks will be inspected annually prior to the fire season and the maintenance of fire breaks will be prioritised as required by the inspection
49	The BMP will provide a schedule for assessing fuel loads.	Actions are still ongoing Bushfire fuel loads and threats will be annually quantify to assess the bushfire hazard of various offset areas prior to each bushfire season. The assessment will consider human, environment and infrastructure assets

Item Number	Implementing the Biodiversity Offset Strategy in the BMP (Table 4 Whitehaven 2015b)	Status to inform revised MCCM BMP 2024
		within and adjacent to offset areas to quantify an overall bushfire risk. The feasibility of various hazard reduction methods will then be considered (for example, but not limited to, fire exclusion, mechanical fuel reduction such as slashing, or undertaking ecological burns) prior to determining annual treatment/actions for each offset property. Offset areas with moderate to high overall bushfire risks will be prioritised as part of an annual ecological burn program and will be subject to conceptual and strategic fire planning and mapping. Once annual fire planning has identified individual paddocks in which ecological burns can feasibly be undertaken, and a burn plan has been prepared.
50	The BMP will provide an option for using controlled grazing to reduce biomass or controlled burns of derived grasslands.	Grazing no longer required as part of BMP, all livestock has been excluded. • **See Section 2.6 below** Controlled burns have been replaced by ecological burns • **See Section 2.9 below**
	General	
51	The BMP will describe that vehicle access will be predominantly restricted to designated tracks to minimise ground disturbance (e.g. compaction).	Actions are still ongoing Vehicle access will be restricted to designated tracks to minimise ground disturbance (e.g. compaction); with the exception for biodiversity management actions and inspections which unavoidably result in vehicles and machinery travelling off-tracks within the offset areas. Fencing, gates, access tracks/fire trails and signage inspections will occur biannually. Maintenance of fences and gates will be undertaken as required; while access tracks/fire trails will be maintained.
52	The BMP will include a description of the Community Consultative Committee.	Actions are still ongoing A CCC for the MCCM has been established in accordance with Condition 7 of Schedule 5 of PA 10_0138.
New Action	The BMP will describe a biannual inspection regime for fire tracks, fences, gates and signage prompting maintenance of this infrastructure as required.	Fencing, gates, access tracks/fire trails and signage inspections will occur biannually. • **See section 2.10 below**
New Action	The BMP will describe an annual erosion inspection program of known erosion site, unsealed tracks and associated drainage structures on the offset properties and review appropriate erosion and sediment control	Erosion management will be determined by annual inspection programs of known erosion sites, unsealed tracks and associated drainage structures across the Offset Areas to review appropriate erosion and sediment control measures required • **See section 2.10 below**
New Action	The BMP will describe the implementation of a dedicated 5-year Noisy Miner control program with the goal of increase habitat density and complexity to reduce suitability for Noisy Miners	Increasing the structural density and complexity of existing habitats for Regent Honeyeater, Swift Parrots and other threatened Woodland birds can reduce the suitability of habitats for Noisy Miners (DAWE, 2020). Natural regeneration will the primary, long term, management measure to address Noisy Miners (and other potential aggressive honeyeater species). as well as a 5 year pilot Noisy Miner control program within existing potential Regent Honeyeater and Swift Parrot habitat on Thornfield, Coonoor, Neranghi North, Long Gully and Triangle. • **See section 2.10 below**

2.1 Planning

Action 1: The BMP (2024) describes Performance and Completion Criteria for Box Gum Woodland CEEC which serve the overall goals to:

- protect and enhance existing woodland and forest habitat for threatened species threatened species listed under the BC Act (those listed in Conditions 49 and 50 of Schedule 3 of Project Approval 10_0138) and listed under the EPBC Act, namely the Regent Honeyeater, Swift Parrot, Corben's Long-eared Bat and *Tylophora linearis*; and
- restore self-sustaining woodland and/or forest within derived native grasslands and 'non-native' areas to provide habitat for the above listed threatened species listed under the EPBC Act.

To evaluate the performance key measures (native overstorey cover, native midstorey cover, native species diversity and native groundcover grasses) will be compared to benchmarks sourced from the *BioMetric Vegetation Condition Benchmarks* (OEH, 2017). In addition, the BMP (2024) will describe a Trigger Action Response Plan outlining the measure that are taken should yearly benchmarks be missed.

The BMP (2024) will describe the use of a modified BioBank Assessment Methodology (BBAM) (OEH, 2014) to undertake ongoing monitoring. The monitoring will be conducted annually in spring at permanently marked plots with the aim to detect trends and changes in the vegetation condition by comparison with control plots and reference plot data. The comparison aims to detect underlying environmental trends that are unrelated to management actions.

Additional Information: *5 - Year and 10 Year Review of the Annual Flora Monitoring Program Data for the Maules Creek and Tarrawonga Mine Biodiversity Offset Areas*. A 5- year review of the annual flora monitoring program conducted by AMBS in 2019 (AMBS, 2020b) concluded that all monitored sites were generally changing towards the reference state for Box Gum Woodland CEEC. It was found that rainfall has a strong influence on species composition and precent cover that may obscure the effects of other factors. The effect of rainfall differs between growth forms. Grasses and exotic are found to peak after high rainfall, whereas forbs are overall less effected by rainfall. The exclusion of grazing was found to positively affect the recruitment of canopy species and native species richness, and also negatively affect exotic species richness. Ecological burns have shown similar effects on native and exotic species to the exclusion of grazing. In general, exotic species richness was decreasing on all properties, but the effect of the weed management was difficult to identify because of the overwhelming influence of rainfall. Weeds were found to be rare in the shrub and canopy layer. The majority of monitoring site in the Box-Gum Woodland CEEC had met the performance criteria at year 5.

The Year 10 review of the annual flora monitoring program (AMBS, 2023b) indicated that 31 out of 32 sites meet the performance criteria for Native Species Plant (NSP) richness. Ten of the 32 sites meet the criteria in terms of Native Overstorey Cover (NOC), while eight sites met the performance criteria for Native Mid-storey Cover (NMS), but many sites are still progressing towards the required performance at Year 10. For Native Overstorey Cover and Native Mid-storey Cover it is likely that growth between Year 10 and Year 20 will contribute further to the required performance level and that the performance criteria will be met in Year 15 of the monitoring program. In terms of Native Ground Cover (grass), all sites except three met the performance criteria. All sites met the criteria in terms of Native Ground Cover (shrubs & other).

Monitoring continued to show that climate extremes, drought (2018 and 2019) followed by high rainfall (2020 to 2022), strongly influence the performance (and completion) attributes being monitored. These climatic triggers are likely to be influencing results more strongly than the WHC

management actions at Year 10. Thus, the results in the Year 10 report should be considered in that light. Where the required performance measure is not being met, and contingencies have not already commenced, remedial action are undertaken. It is hoped that any lag in responses to management actions that may be the result of the weather extremes will be addressed by the implementation of these contingencies.

2.2 Soil Testing and Nutrient Management

Action 10: *The BMP will provide for soil testing to be undertaken on soils in revegetation areas to identify issues with physical and chemical characteristics as well as determine amelioration and rates*. This action is no longer required in the 2024 revised BMP because the primary revegetation planting within the Offset Areas commenced in 2016 and is now materially complete, only subject to maintenance revegetation activities as determined by annual revegetation assessments. A total of 3,126 ha has been actively planted with new plantings since 2016 in the Offset Areas.

Action 11: *The BMP will describe the following nutrient reduction options and the relevant situations where they would be applied; crash grazing periodically to remove nutrients locked in weeds; restrictions of livestock access to limit nutrient enrichment; controlled burns*. This action is no longer required in the 2024 revised BMP. Crash grazing is not part of the revised Biodiversity Offset Strategy as grazing livestock have been excluded from all offset properties since their establishment. Controlled burns will be replaced with ecological burns which mainly serve to enhance floristics.

2.3 Surface Preparation

Action 12: *BMP will describe site preparation in cleared land (e.g. ripping or use of spiked rollers) and (where relevant) in derived grassland (e.g. use of spiked rollers) to reduce soil compaction impacting the success of the revegetation.* This action is no longer required in the 2024 revised BMP because revegetation is materially complete, and no larger scale plantings remain to be undertake making site preparation unnecessary.

Action 13: *The BMP will restrict the use of revegetation techniques that involve high level of physical disturbance in existing Box-Gum Woodland and derived grasslands*. This action is no longer required in the 2024 revised BMP because revegetation is materially complete.

2.4 Revegetation, Seeds and Tube Stock

Modifications to Actions 15 to 23 in the BMP (2024) are described below.

Primary revegetation commenced in 2016 is materially complete, in total 3,126 ha have been actively planted. Secondary revegetation involving passive or assisted regeneration will be undertaken where required to meet performance criteria set out in the revised BMP. The BMP will provide a list of species targeted in secondary revegetation.

Two new actions have been added to the BMP (2024).
New Action: *Annual revegetation assessments.* Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland and will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation

New Action: *Trigger action response plan which together ensure that revegetation criteria are met and provide measures to be undertaken should performance criteria not be met*. Annual flora performance criteria will establish interim yearly targets for tracking change in condition and activating management response. Table 5.12 of the BMP (2024) outlines the Offset Areas Trigger,

Action, Response Plan (TARP) which provides trigger points for contingency measures (corrective actions/response) to be implemented if the flora monitoring program identifies that the annual performance criteria are not being met.

Additional Information: investigations into restorative seeding have been conducted by AMBS (AMBS, 2023). The investigation concludes that seeding has minimal impact on native species richness, especially on sites with a reasonably intact seedbank. Therefore, it was recommended to use seeding only on sites with a low chance of natural regeneration and to only seed species that would naturally occur in the vegetation type.

2.5 Maintenance

Action 26: *The BMP will provide for selective use of slow-release native plant fertiliser to promote plant growth (if required).* This action is no longer required in the 2024 revised BMP as revegetation is materially complete and the use of native plant fertilizer (if required) is no longer needed.

Additional Information: The benefits of ecological thinning of *Callitris glaucophylla* and *Callitris endlicheri* have been investigated by (AMBS 2020a, 2022, 2024a). Thinning should only commence if a decline in biodiversity is detected and BGGW CEEC derived native grassland or semi-cleared woodland is affected (AMBS 2020a). Spatial analyses and ground truthing identified 14 potential sites requiring thinning. However, assessing the sites against the assessment criteria showed that none of the sites required thinning in 2022 (AMBS 2022). Re-assessment of the same 14 sites against the same assessment criteria in 2024 showed that one of the sites meets the criteria for ecological thinning, but thinning was not recommended because of the relatively small size of and new evidence that ecological burns potentially reduce mass recruitment of *Callitris* (AMBS 2024). It was recommended that the sites should be assessed again 5 years after the last assessment.

2.6 Grazing Management

In accordance with Condition 46 of Schedule 3 of PA 10_0138 all livestock grazing has been excluded from all offset properties, including areas of Box Gum Woodland CEEC because the main purpose is the reduction of biodiversity impacts and improving regional biodiversity outcomes.

Additional Information: An investigation into herbivory damage to plantings on the Kelso offset site by AMBS (AMBS, 2017) concluded that the majority of seedlings had herbivory damage, but it was not possible to determine a relationship between the degree of damage and the herbivore species. Additional protection measures have been put in place as a result of this investigation. the type of guards used to protect plantings from grazing will include corflute 400mm size to better protect seedings from kangaroos or use beast guards 1200mm if risk of goat herbivory. Further Native grazers that potentially inhibit restoration/revegetation (e.g. kangaroos) will be recorded. If grazing kangaroos are determined to be overabundant, the need for kangaroo control measures will be reviewed. Annual revegetation assessments will be undertaken to restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC and derived native grassland as well as consideration of other ancillary items (i.e. tree guards to protect plants from grazing kangaroos) that are going to be needed to optimise revegetation success and growth/development of seedlings and seeding areas.

Action 38: *The BMP will describe restriction of livestock access to protect plants that are known to be sensitive to grazing*. This action is no longer required in the 2024 revised BMP as all grazing livestock have been excluded from all offset properties since their establishment.

Action 39: *The BMP will include provision to lightly graze derived grasslands in times of suitable climatic conditions for weed growth (e.g. autumn and/or winter) to reduce vigour of annual grass weeds.* This action is no longer required in the 2024 revised BMP as grazing has been excluded

from the offset properties. As well, a 5- year review of the annual flora monitoring program conducted by AMBS in 2019 (AMBS, 2020b) found that the removal of grazing had resulted in an increase in native plant cover and a reduction of weed cover.

Action 40: *The BMP will provide a mechanism to reduce livestock grazing during drought periods*. This action is no longer required in the 2024 revised BMP as all grazing livestock have been excluded from all offset properties since their establishment.

Action 41: *The BMP will describe the following controlled grazing management options and the relevant situations where they would be applied: rotational grazing system to promote and maintain native plant diversity and cover; removal of grazing livestock.* This action is no longer required in the 2024 revised BMP as grazing livestock have been excluded from the offset properties. As well, a 5 - year review of the annual flora monitoring program conducted by AMBS in 2019 (AMBS, 2020b) found that the removal of grazing had resulted in an increase in native plant cover and a reduction of weed cover.

2.7 Weed Management

The Weed Management program will be implemented in accordance with the NSW *Biosecurity Act* 2015, and the *North West Regional Strategic Weed Management Plan 2023 – 2027* (North West Local Land Services, 2022). Weeds will be controlled in line with recommendation by the *New South Wales Weed Control Handbook* (DPI, 2018a), *Narrabri Shire Council Weed Management Plans*, and *NSW WeedWise*. A seasonal weed assessment will be implemented to identify weed species and inform management.

New Action: *Seasonal weed assessment.* Seasonal weed assessment programs will be undertaken across the Offset Areas to identify weed species, extent and condition of any infestations, and the opportunity for control/management depending on seasonal conditions. The weed assessments ensure that timely and prioritised weed control is undertaken on a seasonal basis with the information given to contractors to identify what, where, when and how to target appropriate resources across the Offset Areas for weed control.

Additional Information: An investigation of the effectiveness of different weed management methods conducted by AMBS (AMBS, 2024b) concluded neither of the tested management methods (spraying, burning, burning + spraying) is significantly more effective than any other. In comparison with unmanaged control sites, all managed sites have lower exotic species richness and exotic ground cover, regardless of method. However, the strongest predictor of species richness and ground cover is the annual rainfall.

2.8 Feral Animal Management

The BMP describes pest animal species and the relevant control measures for each species recorded so far in accordance with the *Ecology and Management of Vertebrate Pests in NSW (*DPI, 2018b) and describes procedures for newly recorded pest animals.

New Action: *Implement standardised rolling monitoring program for pest animals.* BMP (2024) describes a rolling standardised monitoring program for pest animals. The program will be an even and consistent pest animal management effort routinely scheduling rolling monitoring and control programs across Offset Areas. This standardised approach can also be supplemented with periodic targeted programs that focus on specific areas with high pest animal detection, or, on species which have increasing rates of detection. Both the overall management and targeted programs are planned using data collected from grid-based motion detection camera monitoring program, pest animal observations and the results of previous control programs. Pest animal management will

focus on the pest animals that have been recorded in the offset areas that are a legacy inherited from previous owners' management regimes.

2.9 Fire Management

The BMP describes the use of ecological burns for hazard reductions. Where required the relevant stakeholder will be consulted, e.g. NSW Environment Protection Authority for the Approval of Open Burning for ecological burns. Unlike controlled burns the main purpose of ecological burns is the improvement of the native plant biodiversity and not purely for the reduction of bushfire hazard. The BMP will describe a biannual inspection of infrastructure including access tracks that can be used as fire breaks if required.

Action 50: *The BMP will provide an option for using controlled grazing to reduce biomass or controlled burns of derived grasslands*. Grazing will no longer be described in the BMP (WHC 2024) as grazing is excluded from the offset properties. Ecological burns replace control burns as a method to reduce biomass.

2.10 General

Three new actions have been added to the BMP (2024).

New Action: *The BMP will describe a biannual inspection regime for fire tracks, fences, gates and signage prompting maintenance of this infrastructure as required*. Fencing, gates, access tracks/fire trails and signage inspections will occur biannually. Maintenance of fences and gates will be undertaken as required. Fire breaks will be periodically maintained as zero fuel barriers (preferably mineral earth barriers up to 6 m total width of clearing); acknowledging that some fuel accumulation will occur in between maintenance. Fire breaks will be inspected annually prior to the fire season and the maintenance of fire breaks will be prioritised as required by the inspection.

New Action: *The BMP will describe an annual erosion inspection program of known erosion site, unsealed tracks and associated drainage structures on the offset properties and review appropriate erosion and sediment control.* Appropriate erosion and sediment control measures as required will be undertaken in accordance with the Blue Book (Managing Urban Stormwater: Soils and Construction Volume 1 [Landcom, 2004]) and in consideration of Conservation Agreement conditions. Should annual inspection programs identify areas of unstable and active erosion, the erosion register will be updated including what (if any) active remediation works are required to be undertaken.

New Action: *The BMP will describe the implementation of a dedicated 5-year Noisy Miner control program with the goal of increase habitat density and complexity to reduce suitability for Noisy Miners.* The program will be implemented within existing potential Regent Honeyeater and Swift Parrot habitat. The primary, long term, management measure to address Noisy Miners (and other potential aggressive honeyeater species) will be to facilitate natural regeneration to increase the structural density and complexity of existing habitats for Regent Honeyeater, Swift Parrots and other threatened Woodland birds to reduce the suitability of habitats for Noisy Miners. A 5 year pilot Noisy Miner control program will be implemented within existing potential Regent Honeyeater and Swift Parrot habitat on Thornfield, Coonoor, Neranghi North, Long Gully and Triangle. Consistent with the Key Threatening Process Strategy for Noisy Miners (NSW DCCEEW, 2024), the aim of the pilot program will be to evaluate whether methods of control described in the published literature (i.e Crates et al., 2022, Melton et al. 2021) can be used to lower Noisy Miner population density on these Offsets Areas. A Noisy Miner control program will be implemented in 2024/2025 (subject to obtaining the relevant licenses and approvals) at all additional Offset Areas where Noisy Miner densities are above levels reported as being detrimental to native fauna.

3 Conclusion

This supplementary report to the White-Box Yellow-Box Blakely's Red-Gum Woodland Endangered Ecological Community Implementation Plan has been developed to maximise the prospects for regeneration of the Box-Gum Woodland CEEC on the Offset Areas in the light of new investigations that have been undertaken since the submission of the original EECIP in 2015. The review and revision of the 52 actions concerning the MCCM BOS outlined in 2015 resulted in the addition of seven actions and eight actions no longer required, resulting in a revised total of 51 individual actions. This supplementary report to the EECIP will be incorporated in the revised MCCM BMP (2024).

References

AMBS (2017). Kelso Herbivory Damage Assessment. Prepared for Whitehaven Limited. Prepared by AMBS Ecology & Heritage.

AMBS (2020a). Whitehaven Vegetation Thinning Requirements, Strategy, and Program Stage 1. Consultancy report to Whitehaven Coal Limited. Prepared by AMBS Ecology & Heritage.

AMBS (2020b). 5-year Review of the Annual Flora Monitoring Program Data for the Maules Creek and Tarrawonga Mine Biodiversity Offset Areas. Consultancy report to Whitehaven Coal Limited. Prepared by AMBS Ecology & Heritage. Prepared by AMBS Ecology & Heritage.

AMBS (2022). Whitehaven Vegetation Thinning Program Stage 2: Spatial Analysis. Consultancy report to Whitehaven Coal Mining Limited. Prepared by AMBS Ecology & Heritage.

AMBS (2023a). Assessment of Restorative Seeding in the Maules Creek and Tarrawonga Mine Offset Properties. Consultancy report to Whitehaven Coal Limited. Prepared by AMBS Ecology & Heritage.

AMBS (2023b) Flora Monitoring Review at Year 10 (2023) against Performance Criteria in the Maules Creek Coal Mine Biodiversity Management Plan. Consultancy report to Whitehaven Coal Limited.

AMBS (2024a). Whitehaven Vegetation Thinning Requirements, Strategy, and Program Stage 3. Consultancy report to Whitehaven Coal Limited. Prepared by AMBS Ecology & Heritage.

AMBS (2024b). Results from Monitoring of the Maules Creek Coal Mine Offset Property, Onavale, 2019 to 2023. Prepared by AMBS Ecology & Heritage.

DCCEEW (2023) Conservation Advice for the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/43-conservation-advice.pdf.

DPI (2018a). New South Wales Weed Control Handbook – A Guide to Weed Control in Non-crop, Aquatic and Bushland Situations 7th Edition. Department of Primary Industries. Website: https://dpi.nsw.gov.au/__data/assets/pdf_file/0017/123317/weed-controlhandbook.pdf.

DPI (2018b). Ecology and Management of Vertebrate Pests in NSW. Department of Primary Industries.

DPIE (2017). Biometric Vegetation Type Archives. NSW Department of Planning, Industry and Environment. [Accessed 2023] https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet/about-bionet-vegetation-classification/archived-biometric-datasets

Landcom (2004). Managing Urban Stormwater: Soils and Construction Volume 1. NSW Government.

North West Local Land Services (2022) North West Regional Strategic Weed Management Plan 2023-2027.

OEH (2014). BioBanking Assessment Methodology. Office of Environment and Heritage for the NSW Government.

WHC (2015a). Maule's Creek Coal Mine Biodiversity Management Plan. Prepared by Whitehaven Coal Limited.

WHC (2015b). White-Box Yellow-Box Blakely's Red-Gum Woodland Endangered Ecological Community Implementation Plan. Prepared by Whitehaven Coal Limited.

WHC (2024). DRAFT Maule's Creek Coal Mine Biodiversity Management Plan. Prepared by Whitehaven Coal Limited.

Maules Creek Coal Mine
Threatened Fauna Implementation Plan: Supplementary Report

Prepared by AMBS Ecology & Heritage
for Whitehaven Coal Limited

Final

October 2024

AMBS Reference: 24511

Document Information

Citation:	AMBS Ecology & Heritage 2024, *Maules Creek Coal Mine Threatened Fauna Implementation Plan: Supplementary Report*. Consultancy report to Whitehaven Coal.
AMBS Ref:	24511
Versions:	Version 1: Draft Report issued September 2024 Version 2: Draft Report issued 15 October 2024 Version 3: Final Report Issued 16 October 2024
Authors:	Conor Nest, Yang Hu, Chris Jackson
Recipient:	Andrew Wright
Approved by:	Chris Jackson

Contents

1 Introduction 4
1.1 Background 4
1.2 Revised Biodiversity Offset Boundaries 5
1.3 Relevant Conditions of Approval 11
2 Review of Proposed Actions Relating to Factors Likely to Impede and Enhance the Re-establishment and Restoration of Box-Gum Woodland 13
3 Revised Threats to Threatened Fauna and Relevant Recovery or Management Actions 15
4 Review of Threatened Species Management Action Implementation 39
4.1 Baseline data collection 44
4.1.1 Habitat Needs Assessment 44
4.1.2 Baseline fauna surveys 44
4.1.3 5-year Fauna Monitoring Review 44
4.2 Direct management actions 44
4.2.1 Revegetation, Seeds and Tube Stock (Implementation Plan Section 1 – 11) 44
4.2.2 Habitat Features and Habitat Augmentation (Implementation Plan Section 12 – 14) 45
4.2.3 Grazing Management (Implementation Plan Section 15– 16) 45
4.2.4 Weed Management (Implementation Plan Section 17) 46
4.2.5 Pest Animal Management (Implementation Plan Section 18 and 19) 46
4.2.6 Bush Fire Risk Management and Ecological Fire Program (Implementation Plan Section 20 and 19) 46
4.2.7 Noisy Miner Monitoring and Control (Not previously included in Implementation Plan) 47
4.3 Habitat Assessment and Monitoring Programs 47
4.3.1 Annual Fauna Monitoring Program 47
4.3.2 Habitat Augmentation Monitoring Program 47
4.3.3 Koala Monitoring Program 48
4.3.4 Threats and Opportunities Assessment 48
4.3.5 Weed Monitoring Program 48
4.3.6 Pest Animal Monitoring 48
5 Conclusion 48
References 49

Tables

Table 1.1: MCCM Offset Areas 5
Table 1.2: Conservation status of threatened fauna listed in Condition 49 and 50 12
Table 2.1: Proposed actions relating to factors likely to impede and enhance the re-establishment and restoration of Box-Gum Woodland 14
Table 3.1: Revised threatening process and management responses for the targeted threatened species 16
Table 4.1: Implementation Plan for Provision of Habitat for Threatened Fauna in the Offset Areas 40

Figures

Figure 1.1: MCCM Offsets – Overview 6
Figure 1.2: MCCM Offset Areas – Leard Region 7
Figure 1.3: MCCM Offset Areas – Kaputar Region 8
Figure 1.4: MCCM Offset Areas – Nandewar Region 9
Figure 1.5: MCCM Offset Areas – Barraba Region 10

1 Introduction

1.1 Background

AMBS Ecology & Heritage was commissioned by Whitehaven Coal Limited (WHC) to undertake a review of the Maules Creek Coal Mine (MCCM) Threatened Fauna Implementation Plan (WHC 2014) and develop a Supplementary Report (this report) to contemporise the information contained within it. The original Threatened Fauna Implementation Plan (TFIP 2014) was developed to meet the requirements of Project Approval 10_0138 Schedule 3 Conditions 49 and 50 and then be incorporated into the MCCM Biodiversity Management Plan (Original MCCM BMP) and was used to identify pathways for implementing management actions to enhance habitats for threatened species and communities.

Several regulatory and legislative changes have occurred since the finalisation of the original TFIP 2015. Specifically:

- The *Threatened Species Conservation Act* (TSC Act 1999) was rescinded and replaced with the *Biodiversity Conservation Act 2016* (BC Act 2016);
- The MCCM Biodiversity Offset Strategy (BOS) was modified/varied due to:
    - a revised process for establishing long-term security of the Offset Areas with the introduction of the NSW Biodiversity Conservation Trust (BCT) including a revised vegetation classification system in NSW (Plant Community Type (PCT) vegetation mapping) and detailed cadastral survey of the property boundaries by a registered property surveyor;
    - the initial Conservation Agreements (CAs) for the Offset Areas associated with MCCM were registered between 1 April 2020 and 2 June 2021;
    - Variations to Commonwealth EPBC Approval 2010/5566 approved on 24 March 2021 and 21 October 2022 and revised Commonwealth BOS approved on 9 November 2023;
    - NSW Project Approval 10_0138 (MOD9) was approved on 20 March 2024 for the revised NSW BOS; and
    - BCT registered the final CAs for the MCCM Offset Areas between 26 February and 19 March 2024.
- Conservation status for several species has changed; and
- An evolving understanding of threatening processes impacting and recommended management responses on how to restore and manage habitat for several species have changed.

In light of the changes above, the Original MCCM BMP 2015 is undergoing a review which has provided an opportunity for WHC to update the TFIP (this report) to inform with the revised MCCM BMP 2024. The original TFIP (WHC 2014) also addressed the rehabilitation of the post mine landform in association with a Rehabilitation Management Plan (RMP) as well as the management of Threatened Fauna species in the Offset Areas. Given the key regulatory and legislative changes noted above only materially affected the MCCM BOS; this supplementary report updates those implementation actions that relate to the management of Threatened Fauna species and align with the objectives of the Revised MCCM BMP 2024 for MCCM Offset Areas.

The objectives of this supplementary report are:

- Review and update MCCM Offset Areas to which the TFIP applies and update management actions to be incorporated into a Revised MCCM BMP 2024 that relate to the targeted threatened species;
- Review and update key threats that could impact the targeted threatened species;
- Review and update management responses to key threats;

- Summarise successful implementation actions undertaken since the TFIP was finalised;
- Summarise future planned actions to address key threats to threatened species.

1.2 Revised Biodiversity Offset Boundaries

Under EPBC Approval 2010/5566, the revised Commonwealth BOS was approved on 9 November 2023 that formalised the addition of the Thornfield, Long Gully, Neranghi North, Coonoor and Triangle Offset Areas to the MCCM BOS (Figures 1.1 to 1.5). For the purposes of this report, these areas will be referred to collectively as the "Additional Offset Areas" while the other Offset Areas will be collectively known as the "Existing Offset Areas".

NSW Project Approval 10_0138 (MOD9) was approved on 20 March 2024 for revised NSW BOS. MOD9 retains Tralee and Teston North as a component of the NSW MCCM BOS (Figures 1.1 and 1.2). These two properties are not included in the Commonwealth BOS.

The Existing Offset Areas total 12,474 ha and the Additional Offset Areas total 2,407 ha taking the total Offset Area for MCCM to 14,881 ha. Details of the of the MCCM Offset Areas are provided in Table 1.1 and are shown in Figures 1.1 to 1.5.

Table 1.1: MCCM Offset Areas

Offset Area	Total Size of the Offset Area (ha)	Conservation Agreement (CA) ID	Offset Area under PA 10_0138	Offset Area under EPBC 2010/5566
Existing Offset Areas				
Kelso	489.4	VCA0487 under the NP&W Act	✓	✓
Velyama	702.6		✓	✓
Louenville	213.1		✓	✓
Teston South	336.2	VCA0491 under the NP&W Act	✓	✓
Teston North[#]	293.9		✓	
Tralee[#]	205.2		✓	
Wollandilly	804.4	VCA0490 under the NP&W Act	✓	✓
Onavale	557.7	VCA0492 under the NP&W Act	✓	✓
Roseglass	1,465.3	VCA0489 under the NP&W Act	✓	✓
Bimbooria	622.5		✓	✓
Wirradale and Wongala South	4,446.6	CA0234 under the BC Act	✓	✓
Mt Lindesay	2,337.1	CA0235 under the BC Act	✓	✓
Additional Offset Areas (EPBC Act Approval 2010/5566 and MOD9)				
Thornfield	171.3	CA0268 under the BC Act	✓	✓
Long Gully	352.9	CA0691 under the BC Act	✓	✓
Neranghi North	567	CA0693 under the BC Act	✓	✓
Triangle	741.9	CA0694 under the BC Act	✓	✓
Coonoor	573.9	CA0690 under the BC Act	✓	✓
Total	**14,881**			

[#] Only included in NSW MCCM BOS (Project Approval 10_0138)

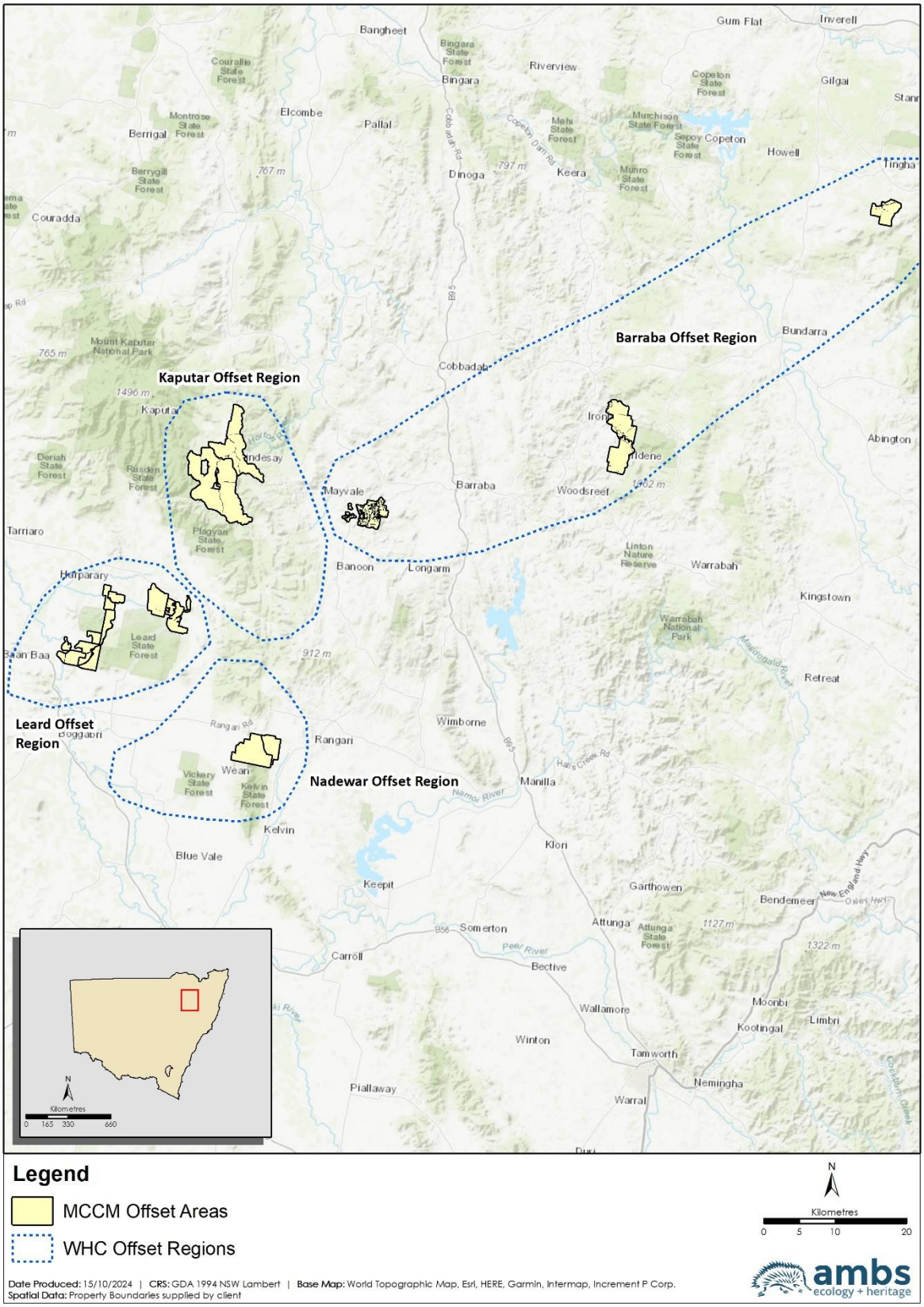

Figure 1.1: MCCM Offsets – Overview

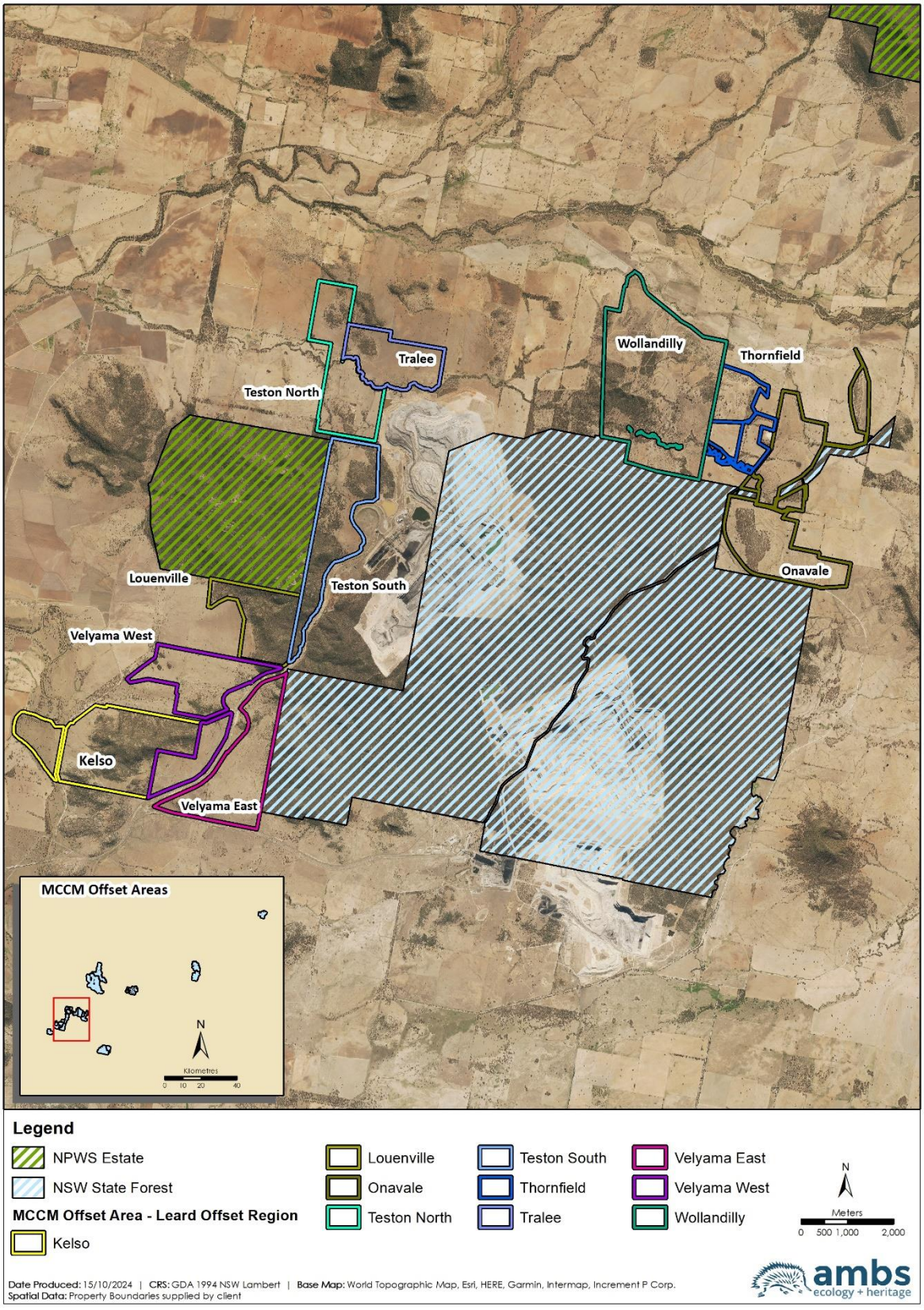

Figure 1.2: MCCM Offset Areas – Leard Region

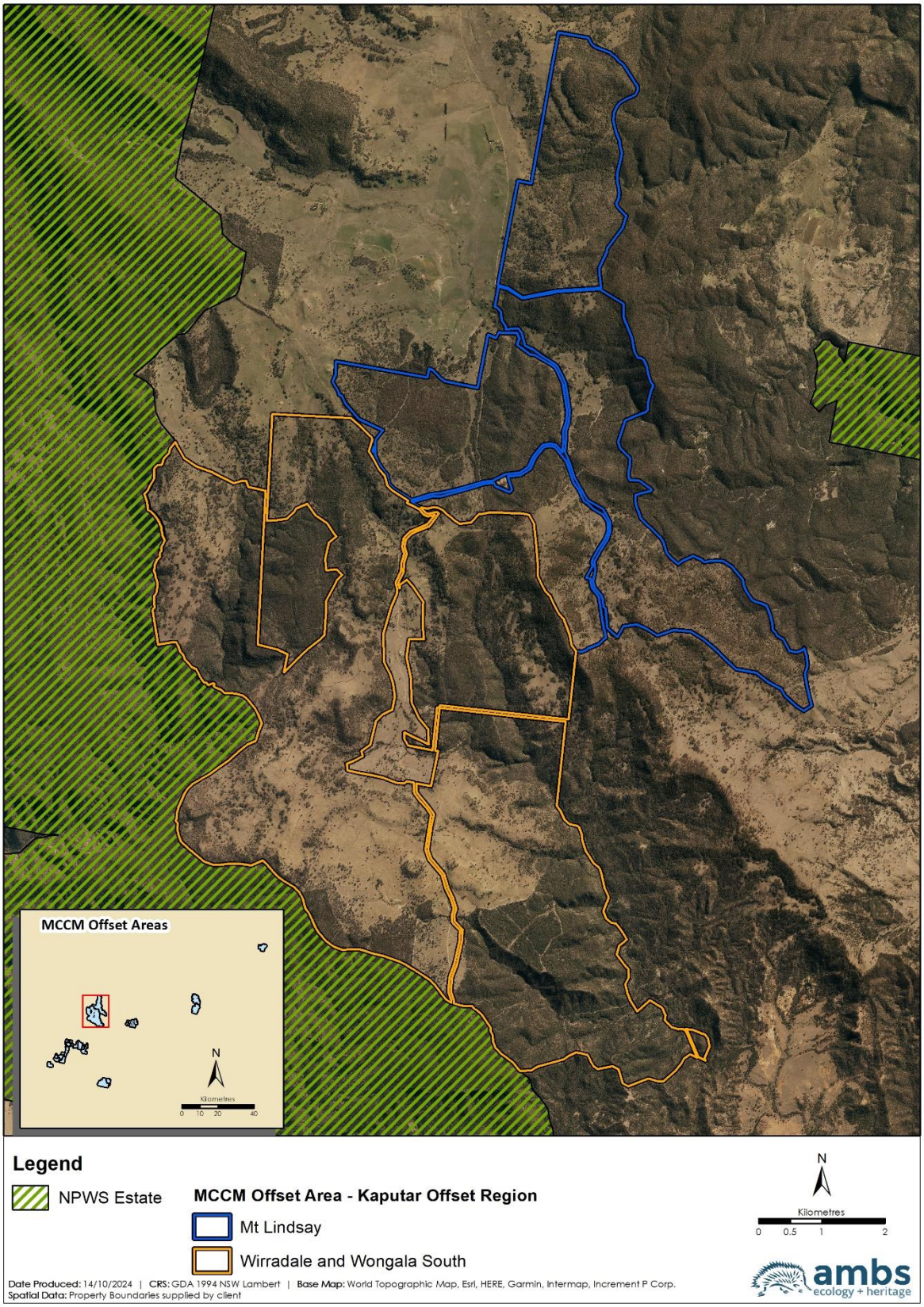

Figure 1.3: MCCM Offset Areas – Kaputar Region

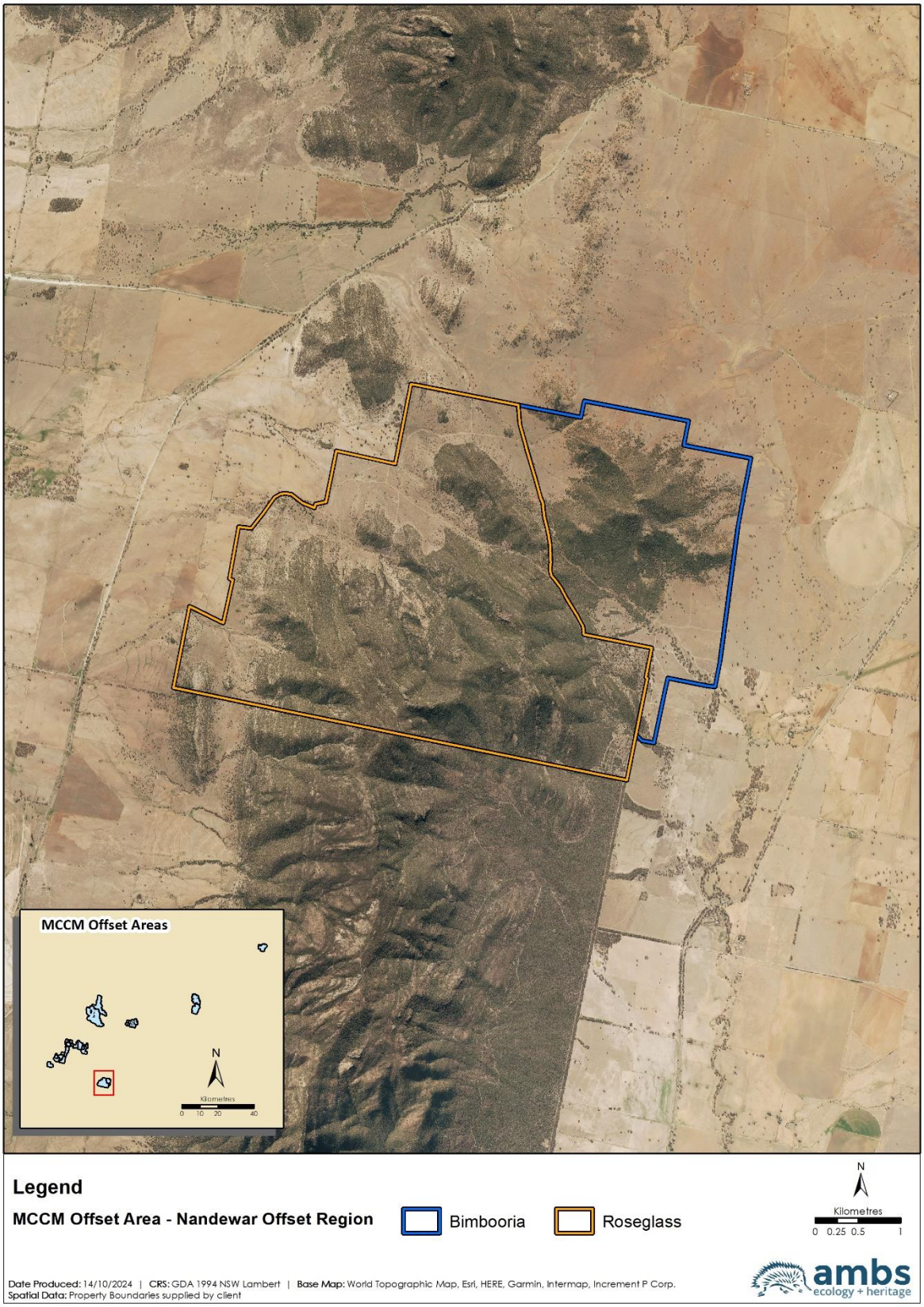

Figure 1.4: MCCM Offset Areas – Nandewar Region

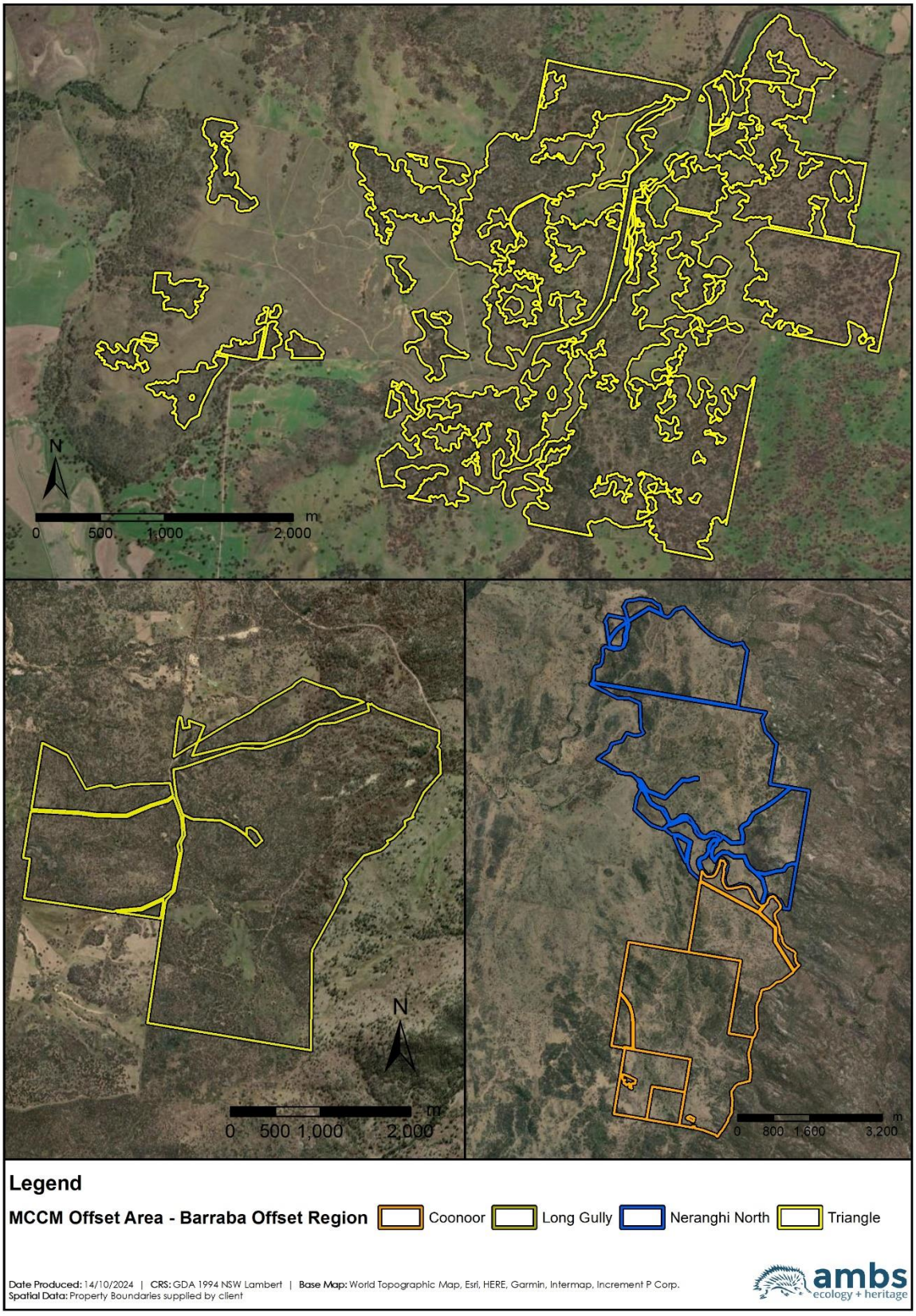

Figure 1.5: MCCM Offset Areas – Barraba Region

1.3 Relevant Conditions of Approval

The TFIP was developed in response to planning conditions incorporated into the MCCM Project Approval granted under the Environmental Planning and Assessment Act 1979 (PA 10_0138). Specifically, the following conditions outline the key factors relating to the development of the TFIP:

- Condition 49: For all threatened species on site, the Applicant must ensure that the Biodiversity Offset Strategy and Rehabilitation Strategy are focused on protection, rehabilitation and long-term maintenance of viable stands of suitable habitat for these species.
  Note: the threatened fauna species on site include: Regent Honeyeater, Fork-tailed Swift, White-throated Needletail, Rainbow Bee-eater, Satin Flycatcher, Speckled Warbler, Swift Parrot, Brown Treecreeper, Diamond Firetail, Grey-crowned Babbler, Hooded Robin, Little Lorikeet, Varied Sittella, White-browed Woodswallow, Black-chinned Honeyeater, Painted Honeyeater, Little Eagle, Spotted Harrier, Black-necked Stork, Square-tailed Kite, Turquoise Parrot, Barking Owl, Masked Owl, Eastern False Pipistrelle, Greater Long-eared Bat, Yellow-bellied Sheath Tail Bat, Eastern Cave Bat, Eastern Bent-wing Bat, Little Pied Bat and Koala.
- Condition 50. The Applicant must:
  a) investigate, in consultation with BCS and the North West LLS, all factors likely to enhance or impede the effective long term provision of suitable habitat(s) for the following species: Regent Honeyeater, Speckled Warbler, Brown Treecreeper, Diamond Firetail, Grey-crowned Babbler, Hooded Robin, Little Lorikeet, Varied Sittella, Black-chinned Honeyeater, Painted Honeyeater, Little Eagle, Spotted Harrier, Turquoise Parrot, Barking Owl, Masked Owl, Eastern False Pipistrelle, Greater Long-eared Bat, Yellow-bellied Sheath Tail Bat and Little Pied Bat;
  b) within 24 months of the date of this approval (and if possible, in conjunction with Stage 2 of the Leard Forest Mining Precinct Regional Biodiversity Strategy), submit a report of this investigation and provide an implementation plan to ensure delivery of suitable areas of viable habitat for the species included in (a) above, for approval by the Planning Secretary; and
  c) incorporate the approved implementation plan into the revised Biodiversity Management Plan, required under condition 52.

After undergoing taxonomic revisions, the Greater Long-eared Bat was split into several species. The common name of the species described in Condition 49 and 50 is now recognised as Corben's Long-eared Bat (*Nyctophilus corbeni*). The Eastern Bentwing-Bat (*Miniopterus schreibersii oceanensis*) has recently been renamed to the Large Bent-winged Bat (*Miniopterus orianae oceanensis).*

Modification 9 to PA 10_0138 has not altered the wording of Condition 49 and 50. Instead it formalises the inclusion of Long Gully, Coonoor, Neranghi North, Thornfield and Triangle referred to collectively as the "Additional Offset Areas" while the other Offset Areas will be collectively known as the "Existing Offset Areas" as part of the overall MCCM Offset Areas thus this supplementary report updates relevant implementation information to support the original approved TFIP (2015) since it was approved.

Several threatened species listed in Conditions 49 and 50 have had their conservation status changed since the publication of the TFIP. Table 1.2 summarises the current conservation status of fauna species listed in Conditions 49 and 50 of Modification 9 (PA 10_0138).

Table 1.2: Conservation status of threatened fauna listed in Condition 49 and 50

Scientific Name	Common Name	Conservation Status	
		BC Act[1]	EPBC Act[2]
Hoplocephalus bitorquatus	Pale-headed Snake	V	-
Ephippiorhynchus asiaticus	Black-necked Stork	E	-
Lophoictinia isura	Square-tailed Kite	V	-
Circus assimilis	Spotted Harrier	V	-
Hieraaetus morphnoides	Little Eagle	V	-
Glossopsitta pusilla	Little Lorikeet	V	-
Potytelis swainsonii	Superb Parrot	V	V
Neophema pulchella	Turquoise Parrot	V	-
Lathamus discolor	Swift Parrot	E	CE
Hirundapus caudacutus	White-throated Needletail	V	M
Apus pacificus	Fork-tailed Swift	-	M
Merops ornatus	Rainbow Bee-eater	-	M
Myiagra cyanoleuca	Satin Flycatcher	-	M
Tyto novaehollandiae	Masked Owl	V	-
Ninox connivens	Barking Owl	V	-
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	-
Chthonicola sagittata	Speckled Warbler	V	-
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V	-
Anthochaera phrygia	Regent Honeyeater	CE	CE
Grantiella picta	Painted Honeyeater	V	-
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V	-
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V	-
Daphoenositta chrysoptera	Varied Sittella	V	-
Stagonopleura guttata	Diamond Firetail	V	-
Phascolarctos cinereus	Koala	E	E
Petaurus norfolcensis	Squirrel Glider	V	-
	Greater Glider		
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-
Nyctophilus corbeni	Corben's Long-eared Bat	V	V
Chalinolobus dwyeri	Large-eared Pied Bat	V	V
Chalinolobus picatus	Little Pied Bat	V	-
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-
Vespadelus troughtoni	Eastern Cave Bat	V	-

V – Vulnerable, E – Endangered, CE – Critically Endangered, M – Migratory

2 Review of Proposed Actions Relating to Factors Likely to Impede and Enhance the Re-establishment and Restoration of Box-Gum Woodland

Table 3 of the TFIP identified actions that were likely to impede or enhance attempts to establish Box Gum Woodland to a suitable condition for threatened fauna. The majority of these actions have been reviewed and, if required, contemporised in a Supplementary Report prepared for the White Box, Yellow Box, Blakley's Red Gum Woodland Endangered Ecological Community Implementation Plan (WHC 2024b).

This TFIP Supplementary Report will focus only on actions that directly relate to threatened fauna. These actions are described in Table 2.1.

Table 2.1: Proposed actions relating to factors likely to impede and enhance the re-establishment and restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Factors Likely to Enhance	Actions
10. Fauna habitat	Lack of bush rocks (Michael *et al.* 2011).	Maximise salvage and reuse of bush rocks.	The Revised MCCM BMP will: Describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138) in Habitat Augmentation.
	Lack of fallen timber/hollow logs (DECCW, 2011).	Maximise salvage and reuse of timber/hollow logs.	The Revised MCCM BMP will: Design and implementation of a habitat augmentation plan detailing the method by which salvaged resources can be collected and way in which they can be deployed to maximise benefit for threatened fauna. Design and implementation of a detailed habitat augmentation plan detailing the method by artificial hollows are deployed to maximize uptake by threatened and non-threatened fauna.
	Lack of structural diversity (Manning *et al.* 2011; Michael *et al.* 2011; Freudenberger *et al.* 2004).	Planting of scattered low shrubs, mid-sized shrubs and tall trees (Freudenberger *et al.* 2004). Maximise salvage and reuse timber/hollow logs. Increase woodland patch size within the offset area (Prober *et al*. 2002).	The Revised MCCM BMP will: Describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat. Design and implementation of a habitat augmentation plan detailing the method by which salvaged resources can be collected and way in which they can be deployed to maximise benefit for threatened fauna. Design and implementation of a detailed habitat augmentation plan detailing the method by artificial hollows are deployed to maximize uptake by threatened and non-threatened fauna. Describe processes that focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity.

3 Revised Threats to Threatened Fauna and Relevant Recovery or Management Actions

In addition to factors relating to Box Gum Woodland (Section 2), the TFIP also defined threatening processes to the target threatened fauna that could impede or limit recovery of each species on the Offset Areas within all habitat. Since its finalisation, the understanding of key threatening processes for each species has changed, as has the understanding of management responses available to address each threat.

For each threatened species listed in Table 1.2, Table 3.1 provides a contemporary list of threats defined by government agencies or literature and prescribed management responses available to address each threat. It also details the key management responses to be incorporated into the Revised MCCM BMP. Table 3.1 is designed to supplement Tables 4, 5 and 6 from the TFIP (WHC 2014). Some threats and proposed management responses fall outside the scope of land management practices employable by WHC. As such, while they have been listed in Table 2.1, however not all of them will need to be explicitly be addressed in the Revised MCCM BMP.

Table 3.1: Revised threatening process and management responses for the targeted threatened species

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Pale-headed Snake	Clearing and fragmentation of habitat. Forestry practices which result in the loss of hollow-bearing trees, as well as other old and dead trees. Too frequent burning or grazing management which destroys old and dead trees and removes understorey vegetation. Habitat degradation from introduced species Illegal collection from the wild.	Retain hollow-bearing trees and other large, mature trees. Investigate methods to augment habitats with hollows or nest boxes suitable for the species. Control pest animal species linked to habitat degradation. Retain and protect stands of native vegetation, especially those with old and dead trees and along creek lines. Manage fire and grazing to protect old and dead trees and maintain understorey vegetation. Establish and protect forested wildlife corridors. Rehabilitate known and potential habitat with planting and coarse woody debris.	The Revised MCCM BMP will describe: Habitat Needs Assessments to maximise salvage and reuse of timber/hollow logs to rehabilitate habitats low in resources with course woody debris to provide habitat for prey species. Habitat augmentation programs, including the installation of nest boxes and deployment of coarse woody debris. The planting of a variety of tree species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Black-necked Stork	Loss of wetland habitat through clearing and draining for flood mitigation and agricultural development. Removal or lack of replacement for mature paddock trees for nests. Degradation of wetland habitats through pollution. Collision with powerlines resulting in significant mortality. Modification or degradation of wetlands through changes in natural water flows. Degradation of wetlands as a result of salinity. Disturbance to behaviour from the presence of people.	Prevent the loss and degradation of wetlands within the species' range. Prevent widespread clearance of tall, isolated paddock trees. Manage wetlands and their catchments to maintain natural hydrological regimes. Avoid modification and degradation of wetland habitats due to grazing, urban and agricultural run-off and pollution, and pesticides/herbicides. Prevent collisions with powerlines by rerouting powerlines from potential nesting areas and attaching discs to existing powerlines. Minimise human disturbance around known and potential nesting sites. Monitor population trends over time.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. Minimising access to high value biodiversity habitats through the installation of signs and low impact fencing. The exclusion of livestock from all Offset Areas.
Square-tailed Kite	Clearing, logging, burning, and grazing of habitats resulting in a reduction in nesting and feeding resources. Disturbance to or removal of potential nest trees near watercourses.	Protect known habitat from fires of a frequency greater than that recommended for the retention of biodiversity. Retain and protect nesting and foraging habitat, particularly along watercourses. Report illegal shooting and egg-collecting activities to authorities.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Spotted Harrier	Loss of foraging and breeding habitat. Loss of mature trees in rural landscapes. Secondary poisoning from rodenticides and the use of pindone in rabbit control. Lack of knowledge on its breeding ecology, including locations of key habitat	Retain and protect nesting and foraging habitats. Protect habitat from overgrazing. Avoid the use of pindone to control rabbits. Protect habitat areas from development.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The methods applied to ensure that any use of poison for pest animal control is managed in a way to reduce secondary impacts.
Little Eagle	Clearing and degradation of foraging and breeding habitat. Human disturbances which disrupt its nesting. Secondary poisoning from rabbit baiting.	Buffer habitat areas from the impacts of human activities. Protect known populations and areas of potential habitat from clearing, fragmentation, or disturbance. Rehabilitate known and potential habitat. Retain and protect nesting and foraging habitat. Broaden research to better understand the species' ecology. Increase community awareness of the need to protect the species and its habitats. Avoid the use of pindone to control rabbits.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The methods applied to ensure that any use of poison for pest animal control is managed in a way to reduce secondary impacts.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Little Lorikeet	Clearing of woodland habitats for agriculture and road construction. Loss of old hollow-bearing trees due to firewood collection and other activities. Competition with the introduced European Honeybee for food and shelter. Habitat infestation by invasive weeds. Inappropriate fire regimes. Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners. Degradation of woodland habitat and vegetation structure due to overgrazing. Historical and ongoing loss of woodlands and dry open sclerophyll forests to agriculture, mining, forestry and residential development. Climate change impacts including reduction in resources due to drought. Lack of knowledge on the species and its habitat requirements.	Retain large mature trees, especially hollow-bearing trees. Manage remnant woodlands and forest to ensure they recover old-growth characteristics. Protect large flowering Eucalyptus trees throughout the habitats frequented by this species. Replant local tree species to maintain foraging habitat and breeding sites. Reduce the abundance of feral Honeybees. Target removal of weeds that compromise habitat structure. Manage fires so that they do not damage large hollow bearing trees. Monitor impacts of Noisy Miners and implement control measures if required. Document known nest sites and ensure their protection.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. Habitat augmentation programs, including the installation of nest boxes. Weed monitoring and control programs. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The implementation of monitoring and a trial direct control program that targets Noisy Miners.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Superb Parrot	Loss of breeding and foraging habitat, including hollow-bearing trees, such as to forestry activities. Poor regeneration of nesting trees and food resources. Loss of hollows to feral bees and native and exotic hollow-nesting birds. Loss of habitat trees from fire damage during hazard reduction and stubble burns. Illegal shooting and trapping. Competition with over-abundant Noisy Miners and Common Mynas for breeding and foraging resources. Lack of knowledge on its breeding ecology, population trends, and key flight paths and corridors.	Retain and protect hollow-bearing trees, and supplement natural hollows with artificial hollows or nest boxes. Retain and protect woodland remnants, and ensure that any impacts are to be minimised, if they cannot be completely avoided. Report illegal trapping and shooting to authorities. Monitor impacts of Noisy Miners and Common Mynas and implement control measures. Ensure hazard reduction and other burns do not damage large hollow bearing trees. Restore habitat in strategic locations close to known habitat and movement corridors.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The implementation of pest animal monitoring and control that will target key species including Common Myna's The implementation of monitoring and a trial direct control program that targets Noisy Miners.
Turquoise Parrot	Clearing of grassy woodland and open forest habitat. Loss of hollow-bearing trees and critical habitat feature degradation. Degradation of habitat through heavy grazing, firewood collection, establishment of exotic pastures and other land management practices. Predation by foxes and cats. Illegal trapping and collection of eggs. Inappropriate fire regimes.	Retain areas of open woodland with grassy understorey and adjoining grassland. Protect hollow-bearing trees for nest sites and retain younger trees to allow them to develop old growth characteristics. Raise public awareness on the importance of large mature trees and undertake restoration in areas adjacent to woodland remnants. Protect foraging and nesting sites from intensive grazing. Target removal of weeds that compromise habitat structure.	The Revised MCCM BMP will describe: Habitat augmentation programs, including the installation of nest boxes. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
	Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners. Climate change impacts including reduction in resources due to drought.	Undertake fox and feral cat control in key habitat areas. Monitor the impacts of Noisy Miners and implement direct control if required. Undertake revegetation to expand existing habitat, especially areas with access to water.	The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The implementation of monitoring and a trial direct control program that targets Noisy Miners.
Swift Parrot	Habitat loss and fragmentation from forest harvesting, residential and industrial development, and agricultural clearing. Competition with feral bees. Collision with man-made structures. Weed invasion impacting on habitat health. Inappropriate fire regimes impacting on food resource availability. Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners. Predation by cats. Vulnerability to Psittacine beak and feather disease.	Retain stands of winter-flowering feed-trees, particularly large mature individuals. Revegetate with winter-flowering tree species where appropriate. Remove feral bee colonies from its habitat area. Develop mitigation strategies at priority sites and movement pathways to reduce collisions. Target removal of weeds that compromise habitat structure. Apply a mosaic pattern when conducting hazard reduction burn to prevent over-frequent burning. Monitor the impacts of Noisy Miners and implement direct control if required. Undertake feral predator controls. Establish beak and feather disease virus status of rehabilitated parrots.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. Weed monitoring and control programs. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The implementation of monitoring and a trial direct control program that targets Noisy Miners.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
White-throated Needletail	Vegetation clearing. Collision with man-made structures.	Retain habitat and vegetation that provide foraging resources, particularly aerial insects, such as intact grassland, woodland, and forests. Restore cleared landscapes and habitat that provide foraging resources for the species. Develop mitigation strategies at priority sites and movement pathways to reduce collisions.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas.
Fork-tailed Swift	Habitat destruction. Predation by feral animals.	Retain habitat and vegetation that provide foraging resources. Undertake fox and feral cat control in key habitat areas.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes.
Rainbow Bee-eater	Predation by feral animals.	Undertake fox and feral cat control in key habitat areas.	The Revised MCCM BMP will describe: The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Satin Flycatcher	Clearing of mature forests.	Retain habitat and vegetation that provide foraging resources, especially mature forests.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas.
Masked Owl	Loss of mature hollow-bearing trees. Clearing of habitat for grazing, agriculture, forestry or other development. Inappropriate fire regimes, especially regular burning. Secondary poisoning from rodenticides. Vehicle collisions.	Retain and protect stands of native vegetation, especially those with hollow-bearing trees. Retain hollow-bearing trees as well as large, mature trees that provide habitat for the species. Apply a mosaic pattern when conducting hazard reduction burn to prevent over-frequent burning. Target landowner education and limit pesticide use. Use targeted public campaign to increase awareness of the species' presence and investigate engineering or vegetation modification methods to reduce road kills.	The Revised MCCM BMP will describe: Habitat Needs Assessments to maximise salvage and reuse of timber/hollow logs to rehabilitate habitats low in resources with course woody debris to provide habitat for prey species. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. Minimising access to high value biodiversity habitats through the installation of signs and low impact fencing. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The methods applied to ensure that any use of poison for pest animal control is managed in a way to reduce secondary impacts.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Barking Owl	Clearing and degradation of habitat through cultivation, intense grazing and the establishment of exotic pastures. Inappropriate forest harvesting practices that remove old, hollow-bearing trees and change open forest structure to dense regrowth. Firewood harvesting resulting in the removal of fallen logs and felling of large dead trees. Too-frequent fire leading to degradation of understorey vegetation which provide shelter and foraging substrates for their prey. Destruction of hollow-bearing trees which provide nest sites. Competition for prey with foxes. Nest predation by native species such as goannas and brushtail possums. High use of rodenticide resulting in secondary poisoning. Disturbance of nesting and foraging by inappropriate use of call-playback surveys. Poor understanding of the species' biology.	Protect woodland and open forest remnants, especially those containing hollow-bearing trees. Retain and enhance vegetation along watercourses and surrounding areas to protect their habitat and that of their prey. Retain standing dead trees and large fallen logs. Apply a mosaic pattern when conducting hazard reduction burn to prevent over-frequent burning. Undertake fox control in key habitat areas. Protect habitat remnants from heavy grazing.	The Revised MCCM BMP will describe: Habitat Needs Assessments to maximise salvage and reuse of timber/hollow logs to rehabilitate habitats low in resources with course woody debris to provide habitat for prey species. Ecological thinning assessments will be implemented to investigate the efficacy of thinning dense regrowth of Cypress on habitat quality. Minimising access to high value biodiversity habitats through the installation of signs and low impact fencing. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The methods applied to ensure that any use of pesticides for pest animal control is managed in a way to reduce secondary impacts. Acoustic monitoring techniques that adhere to well-established guidelines and minimize disturbance to the species.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Brown Treecreeper (eastern subspecies)	Historical loss of woodland and forest habitats as a result of agriculture, forestry, mining and residential development. Fragmentation of woodland and forest remnants. Ongoing degradation of habitat, particularly the loss of tree hollows and fallen timber from firewood collection and overgrazing, and other inappropriate land management practices. Overgrazing and too-frequent fires leading to lack of regeneration of eucalypt understorey in woodland habitats. Habitat infestation by invasive weeds Loss of ground litter from compaction and overgrazing. Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners.	Modify management practices to reduce the impact of grazing. Retain hollow-bearing trees and protect dead standing or fallen timber from disturbance. Implement strategies that increase hollow availability, including nest box installations. Undertake restoration in areas adjacent to woodland habitats. Protect known habitat from grazing and allow for natural regeneration. Apply a mosaic pattern when conducting hazard reduction burn to prevent over-frequent burning. Target removal of weeds that compromise habitat values. Monitor the impacts of Noisy Miners and implement direct control if required. Increase remnant size and connectivity through planting initiatives. Conduct targeted research into different ways of restoring degraded habitat.	The Revised MCCM BMP will describe: Habitat augmentation programs, including the installation of nest boxes. Habitat Needs Assessments to maximise salvage and reuse of timber/hollow logs to rehabilitate habitats low in resources with course woody debris to provide habitat for prey species. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. Weed monitoring and control programs. The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes. The implementation of monitoring and a trial direct control program that targets Noisy Miners.
Speckled Warbler	Clearance of remnant grassy woodland habitat for paddock management and firewood collection. Poor regeneration of grassy woodland habitats. Modification and destruction of ground habitat through removal of litter and fallen timber,	Retain existing vegetation along roadsides, in paddocks and remnant stands of native trees. Retain dead timber on the ground in open woodland areas, and limit firewood collection. Encourage regeneration of habitat by protecting remnant stands.	The Revised MCCM BMP will describe: Habitat Needs Assessments to maximise salvage and reuse of timber/hollow logs to rehabilitate habitats low in resources with course woody debris to provide habitat for prey species. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
	introduction of exotic pasture grasses, heavy grazing and compaction by stock and frequent fire. Habitat loss and fragmentation for residential and agricultural developments. Nest predation by native and non-native birds, cats, dogs and foxes. Infestation of habitat by invasive weeds. Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners. Climate change impacts including reduction in resources due to drought.	Protect suitable woodland habitats, particularly native ground plant layer and coarse woody debris. Increase the size of existing remnants, planting trees and establishing buffer zones around woodland remnants. Undertake fox and feral cat control programs. Target removal of weeds that compromise habitat value. Monitor the impacts of Noisy Miners and implement direct control if required.	foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. Minimising access to high value biodiversity habitats through the installation of signs and low impact fencing. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes. Weed monitoring and control programs. The implementation of monitoring and a trial direct control program that targets Noisy Miners.
Black-chinned Honeyeater (eastern subspecies)	Clearing of remnant open forest and woodland habitat. Intense grazing leading to poor regeneration of open forest and woodland habitats. Fragmentation and loss of woodland habitat to agriculture, mining, forestry and residential development. Infestation by invasive weeds. Inappropriate fire regimes. Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners.	Retain suitable woodland habitats, particularly those with an intact native ground plant layer. Encourage regeneration of habitat by protecting remnant stands and reducing grazing. Increase the size and connectivity of existing remnants, planting trees and establishing buffer zones around woodland remnants. Target removal of weeds that compromise habitat values. Conduct hazard reduction burns so that the fire interval is long enough to enable the recruitment of key foraging species.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. Weed monitoring and control programs. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The implementation of monitoring and a trial direct control program that targets Noisy Miners.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
	Climate change and reduction in resources due to drought. Lack of knowledge on the species and its habitat requirements.	Monitor the impacts of Noisy Miners and implement direct control if required.	
Regent Honeyeater	Loss and fragmentation of habitat from clearing for mining, agricultural and residential development. Continuous degradation of habitat due to the lack of recruitment of key forage species. Suppression of natural regeneration of overstorey tree species and shrub species from overgrazing. Competition from larger aggressive honeyeaters, particularly overabundant Noisy Miners. Egg and nest predation by native birds and mammals. Inappropriate forestry management practices that remove large mature resource-abundant trees. Loss of key foraging resources as a result of inappropriate fire regimes. Droughts that limit the availability of free-standing water.	Prevent the loss of key nectar tree species and mistletoes in and around its habitat areas, especially large mature trees. Protect key breeding and foraging habitats from developments. Encourage natural regeneration and increase the remnant size of known and potential habitats. Continue tree planting programs at key breeding and foraging locations. Monitor the impacts of Noisy Miners and implement direct control if required. Conduct hazard reduction burns so that the fire interval is long enough to enable the recruitment of key foraging species.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. Minimising access to high value biodiversity habitats through the installation of signs and low impact fencing. The implementation of monitoring and a trial direct control program that targets Noisy Miners.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Painted Honeyeater	Clearing of woodlands and open forests. Removal of large, old trees with heavy mistletoe infestations. Degradation of open forest and woodland remnants, including thinning of trees bearing mistletoe. Habitat infestation by weeds such as African boxthorn, Gazania and invasive grasses. Inappropriate fire regimes. Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners. Degradation and simplification of habitat due to overgrazing.	Protect remnant woodland and open forest throughout the range of the species. Prevent the loss of key nectar tree species and mistletoes in and around its habitat areas, especially large mature trees. Manage grazing on sites where the species' habitat occurs. Target removal of weeds that compromise habitat values. Conduct hazard reduction burns so that the fire interval is long enough to enable the recruitment of key foraging species. Monitor the impacts of Noisy Miners and implement direct control if required. Encourage regeneration of habitat by protecting remnant stands, undertaking new plantings.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes. Weed monitoring and control programs. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The implementation of monitoring and a trial direct control program that targets Noisy Miners.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Hooded Robin (south-eastern form)	Clearing of woodlands, resulting in loss and fragmentation of habitat. Modification and destruction of ground habitat through heavy grazing and compaction by stock, removal of litter and fallen timber, introduction of exotic pasture grasses and frequent fire. Predation by native and non-native birds, cats, dogs and foxes. Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners. Disturbance and changes to vegetation structure due to forestry activities, such as fire and timber harvesting. Climate change impacts, such as reduction in resources due to drought.	Retain dead timber on the ground in open woodland areas. Enhance potential habitat through regeneration by reducing the level of grazing. Increase the size of existing remnants, by planting trees and establishing buffer zones of un-modified, uncultivated pasture around woodland remnants. Target removal of weeds that significantly compromise habitat values. Conduct hazard reduction burns so that the fire interval is long enough to enable the recruitment of key foraging species. Monitor the impacts of Noisy Miners and implement direct control if required.	The Revised MCCM BMP will describe: Habitat Needs Assessments to maximise salvage and reuse of timber/hollow logs to rehabilitate habitats low in resources with course woody debris to provide habitat for prey species. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. Weed monitoring and control programs. The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The implementation of monitoring and a trial direct control program that targets Noisy Miners.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Grey-crowned Babbler (eastern subspecies)	Loss, degradation and fragmentation of woodland habitat on high fertility soils. Excessive grazing and loss of coarse woody debris resulting in degradation and loss of important habitat components. Infestation by invasive weeds including exotic perennial grasses. Inappropriate fire regimes. Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners. Nest predation by native species, such as ravens and butcherbirds, in regions where populations are small and fragmented. Climate change impacts, such as reduction in resources due to drought.	Retain, protect and restore areas of woodland in areas being used by the species. Manage grazing to ensure natural regeneration of tree and shrub species and retention of grass cover, stick and leaf litter. Increase the size of existing remnants, planting trees and establishing buffer zones around woodland remnants. Retain woody debris in the understorey. Control invasive exotic perennial grasses. Conduct strategic hazard reduction burning in known habitat areas to provide a mosaic of different ages since last fire. Monitor the impacts of Noisy Miners and other predators and implement direct control if required.	The Revised MCCM BMP will describe: Habitat Needs Assessments to maximise salvage and reuse of timber/hollow logs to rehabilitate habitats low in resources with course woody debris to provide habitat for prey species. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. Weed monitoring and control programs. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The implementation of monitoring and a trial direct control program that targets Noisy Miners.
Varied Sittella	Habitat loss and degradation due to forestry activities, such as forest clearing and firewood collection. Infestation of habitat by invasive weeds. Inappropriate fire regimes. Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners. Overgrazing by stock impacting on leaf litter and shrub layer.	Retain existing vegetation and remnant stands along roadsides and in paddocks. Increase the size of existing remnants and re-establish links by planting trees and establish buffer zones. Limit firewood collection and retain dead timber in open forest and woodland areas. Apply a mosaic pattern when conducting hazard reduction burn to prevent over-frequent burning.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
	Climate change impacts, such as reduction in resources due to drought.	Control weeds in areas of known habitat Monitor the impacts of Noisy Miners and implement direct control if required. Encourage regeneration of habitat by managing the intensity and duration of grazing.	Weed monitoring and control programs. Minimising access to high values biodiversity habitats through the installation of signs and low impact fencing. The implementation of monitoring and a trial direct control program that targets Noisy Miners.
Diamond Firetail	Clearing and fragmentation of woodland, open forest and grassland habitat for agriculture and residential development, and firewood collection. Modification and destruction of ground and shrub layers through the removal of native plants, litter and fallen timber, introduction of exotic pasture grasses, heavy grazing and compaction by stock, and frequent fire. Habitat infestation by invasive weeds. Predation of eggs and nestlings by increased populations of native predators such as the Pied Currawong. Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners.	Retain dead timber on the ground in open woodland areas. Reduce heavy grazing in areas of known or potential habitat. Control weeds in areas of known habitat. Retain and protect woodland, open forest and grassland habitat from clearing, fragmentation and disturbance. Expand and reconnect smaller fragments of habitat, by encouraging natural regeneration. Maintain or re-establish connectivity between remnant populations by revegetating sites. Monitor the impacts of Noisy Miners as well as other over-abundant native predators and implement direct control if required.	The Revised MCCM BMP will describe: Habitat Needs Assessments to maximise salvage and reuse of timber/hollow logs to rehabilitate habitats low in resources with course woody debris to provide habitat for prey species. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. Minimising access to high value biodiversity habitats through the installation of signs and low impact fencing. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. Weed monitoring and control programs. The implementation of monitoring and a trial direct control program that targets Noisy Miners.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Koala	Loss, modification and fragmentation of habitat. Collisions with vehicles. Intense prescribed burns or wildfires that scorch or burn the tree canopy. Diseases such as Chlamydia. Predation by introduced predators including dogs. Heat stress through drought and heatwaves. Lack of knowledge on the species' population distribution and trends, movements, habitat use, and values to the local community.	Undertake planting to restore and increase areas of habitat. Promote the protection and retention of high-quality habitat. Undertake introduced predator control programs. Identify black spots for road mortalities and target proven mitigation techniques. Engage with rehabilitation groups to better understand the causes of koala mortality. Manage prescribed burning to ensure that any potential impacts on habitat and populations are minimized. Research and trial management actions that help establish refuge habitats and promote connectivity. Undertake surveys to investigate koala habitat use and monitor population trends.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets and pre-clearing surveys in areas where Koala have previously been recorded. Monitoring surveys investigating Koala occupancy and abundance. The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes.
Squirrel Glider	Habitat loss, fragmentation and degradation. Loss of hollow-bearing trees. Loss of understorey food resources. Inappropriate fire regimes. Predation by exotic predators. Mortality due to entanglement on barbed wires. Vehicle collisions.	Retain and protect areas of habitat, particularly mature or old growth forest containing hollow-bearing trees and sap-feeding trees. Raise public awareness of the importance of large trees, especially those adjacent to remnant vegetation. Retain food resources, particularly sap-feeding trees and understorey feed species such as Acacias and banksias. Apply a mosaic pattern when conducting hazard reduction burn to prevent over-frequent burning.	The Revised MCCM BMP will describe: The removal of internal property barbed-wire fences. Habitat augmentation programs, including the installation of nest boxes. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
	Changes in spatial and temporal distribution of habitat due to climate change.	Undertake direct control of introduced predators such as foxes and cats. Install artificial hollows or nest boxes in areas of younger regrowth. Replace barbed wires with regular wires on fences in and adjacent to habitat. Rehabilitate habitats in urban and rural areas to reduce edge effects and increase resource availability.	The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes.
Greater Glider	Loss of habitat including fragmentation and lack of connectivity to surrounding habitat as a result of human activities including farming, forestry, urbanisation, and rural development. Loss of hollow-bearing trees. Too frequent or high severity fires impacting populations, habitat, and hollow bearing trees. Entanglement in barbed wires on fences. Alteration of microclimate conditions due to climate change. Lack of knowledge on the impacts of critical threats on population trends and the effectiveness of management actions.	Retain and protect areas of habitat, particularly mature or old growth forest containing hollow-bearing trees and feed trees. Undertake planting to restore and increase areas of habitat. Install artificial hollows or nest boxes in areas of younger regrowth. Apply a mosaic pattern when conducting hazard reduction burn to prevent over-frequent burning. Replace barbed wires with regular wires on fences in and adjacent to habitat.	The Revised MCCM BMP will describe: Habitat augmentation programs, including the installation of nest boxes. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Yellow-bellied Sheathtail-bat	Disturbance to roosting and summer breeding sites. Clearing of its foraging habitats for residential and agricultural developments. Loss of hollow-bearing trees and clearing and fragmentation of forest and woodland habitat. Pesticide and herbicide use.	Retain stands of native vegetation, especially those with hollow-bearing trees (including dead trees), and retain other structures containing bats. Retain a buffer of vegetation around roost sites in vegetated areas. Protect hollow-bearing trees for breeding sites, as well as younger mature trees. Install artificial hollows or nest boxes in areas of younger regrowth. Reduce the use of pesticides in the environment. Encourage regeneration and replanting of local flora species to maintain bat foraging habitat.	The Revised MCCM BMP will describe: Habitat augmentation programs, including the installation of nest boxes. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The methods applied to ensure that any use of pesticides and herbicides for pest animal and weed control is managed in a way to reduce secondary impacts. The exclusion of livestock from all Offset Areas.
Large Bent-winged Bat	Disturbance of cave habitat by human presence, particularly during winter or breeding season. Loss of high productivity foraging habitat. Introduction of exotic pathogens, particularly white-nose fungus. Cave entrances being blocked by encroaching vegetation. Hazard reduction and wildfire fires during the breeding season. Predation by foxes and cats.	Protect roosting sites from human activity or disturbance. Promote public awareness of the species' importance throughout rural communities. Retain native vegetation around roost sites, particularly within 300 m of maternity caves. Install artificial hollows or nest boxes in areas of younger regrowth. Minimise the use of pesticides in foraging areas. Undertake non-chemical removal of weeds to prevent obstruction of cave entrances. Protect known and potential habitat from burning at intervals that are detrimental to the species.	The Revised MCCM BMP will describe: Habitat augmentation programs, including the installation of nest boxes. Minimising access to high value biodiversity habitats through the installation of signs and low impact fencing. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
		Undertake fox and cat control around roosting sites, particularly maternity caves.	The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes.
Corben's Long-eared Bat	Loss or modification of remnant semi-arid woodland habitat. Loss of hollow-bearing trees. Pesticide use in or around foraging areas. Inappropriate fire regimes. Disturbance to winter roosting and breeding sites.	Retain remnant woodland vegetation. Retain hollow-bearing trees and protect other mature trees to allow for future hollow tree recruitment. Install artificial hollows or nest boxes in areas of younger regrowth. Minimise the use of pesticides in and adjacent to foraging areas. Protect roosting sites from human activity or disturbance.	The Revised MCCM BMP will describe: Habitat augmentation programs, including the installation of nest boxes. Habitat Needs Assessments to maximise salvage and reuse of timber/hollow logs to rehabilitate habitats low in resources with course woody debris to provide habitat for prey species. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. Ecological thinning assessments will be implemented to investigate the efficacy of thinning dense regrowth of Cypress on habitat quality.
Large-eared Pied Bat	Clearing and isolation of forest and woodland habitats near cliffs, caves and old mine workings for agriculture or development. Loss of foraging habitat close to cliffs, caves and old mine workings from forestry activities, too-frequent burning, and grazing.	Protect known and potential habitat from burning at too-frequent intervals. Avoid damage to known roosting and maternity sites from mining activities.	The Revised MCCM BMP will describe: Habitat augmentation programs, including the installation of nest boxes. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
	Damage to roosting and maternity sites from mining operations. Use of pesticides. Disturbance to roosting areas by goats. Lack of knowledge on the species' habitat requirements.	Protect known and potential forest and woodland habitat around cliffs, rock overhangs and old mine workings from clearing and isolation. Install artificial hollows or nest boxes in areas of younger regrowth. Reduce the use of pesticides. Undertake feral goat control programs. Undertake research and surveys on the species' habitat requirements, as well as its threat dynamics.	foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes.
Little Pied Bat	Loss or modification of habitat. Predation by cats. Application of herbicides in or adjacent to foraging areas. Inappropriate fire regimes. Removal of large trees containing hollows needed for nesting. Lack of knowledge on the species' breeding ecology, including locations of key habitats.	Retain foraging and roosting habitat. Retain hollow-bearing trees and protect other mature trees to allow for future hollow tree recruitment. Install artificial hollows or nest boxes in areas of younger regrowth. Undertake feral cat control programs. Minimise the use of pesticides within or adjacent to key habitat areas. Protect known and potential habitat from burning at intervals that are detrimental to the species. Broaden research into all aspect of the species' biology and ecology.	The Revised MCCM BMP will describe: Habitat augmentation programs, including the installation of nest boxes. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
Eastern False Pipistrelle	Disturbance to winter roosting and breeding sites. Loss of hollow-bearing trees. Loss and fragmentation of foraging habitat, particularly extensive areas of continuous forest and areas of high productivity.	Retain native vegetation that is floristically and structurally diverse. Retain hollow-bearing trees and protect other mature trees to allow for future hollow tree recruitment. Install artificial hollows or nest boxes in areas of younger regrowth. Minimise the use of pesticides within or adjacent to key habitat areas. Protect roost sites from disturbance.	The Revised MCCM BMP will describe: Habitat augmentation programs, including the installation of nest boxes. The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas.
Eastern Cave Bat	Clearing and isolation of dry eucalypt forest and woodland, particularly around cliffs and other areas containing suitable roosting and maternity sites due to agricultural and residential development. Loss of roosting habitat including rocky areas, caves, overhangs crevices, cliffs and escarpments, or old mines or tunnels, old buildings and sheds. Loss of suitable feeding habitat near roosting and maternity sites as a result of modifications from timber harvesting and inappropriate fire regimes usually associated with grazing. Pesticides and herbicides which reduce the availability of its invertebrate prey. Damage to roosting and maternity sites from mining operations. Predation by cats and foxes.	Protect known and potential habitat from clearing and isolation, particularly dry open forest and woodland around cliffs, and rock overhangs. Protect known and potential habitat from burning at too-frequent intervals. Avoid damage or disturbance to known roosting and maternity sites from mining and other activities. Raise landowner awareness on the species' survival. Reduce the use of pesticides in habitat areas. Undertake fox and feral cat control programs. Broaden research into all aspect of the species' biology and ecology.	The Revised MCCM BMP will describe: The planting of a variety of tree and shrub species aligned with approved PCT vegetation mapping of Offset Areas to increase foraging resources, connectivity and patch size and decrease fragmentation. The exclusion of livestock from all Offset Areas. The use of ecological burns to manage fire risk, fuel load and habitat complexity including processes for excluding fire from high conservation value biodiversity assets. The implementation of pest animal monitoring and control programs that target exotic herbivores and predators, including cats and foxes.

Common Name	Revised threats and threatening processes	Revised recommended management actions relevant to WHC Biodiversity Offset Areas	Actions Relevant to the MCCM Biodiversity Offset Strategy Outlined in the Threatened Fauna Implementation Plan
	Lack of knowledge on its ecology, behaviour and habitat requirements.	Conduct surveys in suitable habitat within the species' range to determine distribution and population size.	

4 Review of Threatened Species Management Action Implementation

The TFIP includes an "*Implementation Plan for Provision of Habitat for Threatened Fauna in the Offset Areas*" (replicated in this report in Table 4.1). It is used to define priority threatened fauna management actions for the MCCM Offset Areas for inclusion into the BMP.

WHC has employs various approaches to addressing the key threats to each of the targeted threatened species. This approach includes the collection of baseline data, implementation of a wide variety of management actions and implementation of monitoring programs to inform future approaches to threatened fauna habitat enhancement.

Section 4.1 details survey programs WHC used to collect baseline data on threatened fauna habitat, threatened fauna abundance and occupancy.

Section 4.2 details the current status of management actions defined in Table 4.1. Management actions that are incorporated into the Revised MCCM BMP focus on broad areas improvement and maintenance of habitats as well more direct enhancement of habitats. Section 5.2 also identifies management actions that are no longer required to the MCCM Offset Areas and defines additional actions that are being implemented but which were not included in the TFIP.

Section 4.3 details the monitoring programs that WHC utilises to assess the efficacy of the management actions defined in the implementation plan in terms of improving threatened fauna habitat, abundance and occupancy. WHC utilises monitoring programs to gain a greater understanding on how effectively management actions are improving fauna habitat.

Table 4.1: Implementation Plan for Provision of Habitat for Threatened Fauna in the Offset Areas

Actions for Implementing the BOS in the Original BMP 2015	Status as per Revised BMP 2024
Revegetation, Seeds and Tube Stock	Primary revegetation commenced in 2016 is materially complete (Section 4.2.1). In total 3,126 ha have been actively planted with species listed in the Indicative Revegetation species List updated in the revised BMP. Natural regeneration has been facilitated (through pest animal and weed control) where there is native woodland and forest and/or derived native grassland (moderate to good condition). Actions are still ongoing, with revisions. The Revised MCCM BMP will describe: How annual revegetation assessments are undertaken to restore self-sustaining woodland within existing areas of Threatened Fauna Habitat and derived native grassland. It will consider key species required to match the target vegetation communities as well as natural or physical constraints to revegetation.
1. The BMP will describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.	
2. The BMP will aim to include a wide diversity of species in the seed mix.	
3. The RMP will include the planting of *Allocasuarina* or *Casuarina* species.	
4. The RMP will include the planting of *Acacia* species, including both tree and shrub varieties.	
5. The BMP will include the planting of a variety of box, ironbark and gum eucalypt species including: - White Box (*Eucalyptus albens*); - Yellow Box (*E. melliodora*); - *Angophora* species; - Mugga Ironbark (*E. sideroxylon*); - Apple Box (*E. bridgesiana*); - River Red Gum (*E. camaldulensis*); - Blakely's Red Gum (*E. blakelyi*); - Red Stringybark (*E. macrorhyncha*); - Inland Grey Box (*E. microcarpa*); and - Snow Gum (*E. pauciflora*).	
6. The BMP will include the planting of *Melaleuca* species.	
7. The BMP will include the planting of a variety of native shrubs.	
8. The BMP will include the planting of a variety of native grasses, including tussock grass species.	
9. The BMP will include the planting of a variety of native herbs.	

Actions for Implementing the BOS in the Original BMP 2015	Status as per Revised BMP 2024
10. The BMP will include the planting of a variety of native forbs.	
11. The BMP will focus on increasing woodland patch size within the Offset Area and aim to enhance ecological connectivity.	
Habitat Features	Actions are still ongoing, with revisions. The Revised MCCM BMP will describe: How habitat augmentation using salvaged resources (including from the MCCM site where possible) or nest boxes will be undertaken in offset areas with habitats identified as having low habitat resources. MCC has undertaken a habitat needs assessment to identify across the offset areas where low habitat resources are to determine what habitat augmentation is required. Habitat augmentation will be staged reflective of existing fauna habitat condition and will utilise available salvaged resources such as coarse woody debris, rocky debris (bush rocks) and artificial hollows (including nest boxes) in consideration of Conservation Agreement conditions.
12. The BMP will describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).	
13. The BMP will describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.	
14. The BMP will not permit firewood collection.	
Grazing Management	Actions are still ongoing, with revisions. The Revised MCCM BMP will describe: How agricultural production and livestock grazing is currently excluded from the offset areas. Any inadvertent grazing from stray neighbouring stock will be removed as soon as practicable.
15. The BMP will describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).	
16. The BMP will describe management of livestock to maintain ground cover and diversity of native plants.	
Weed Management	Actions are still ongoing, with revisions. The Revised MCCM BMP will describe: A number of environmental and priority weeds are known to occur in the offset areas as listed in Table 5 3 that are a legacy inherited from previous owners' management regimes. Based on seasonal weed assessment results; How weed control will take place targeting priority weeds and any other environmental weeds present in the offset areas based on season weed assessments. The response if new priority weeds or environmental weeds are identified including recommended techniques for management.
17. The BMP will provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).	

Actions for Implementing the BOS in the Original BMP 2015	Status as per Revised BMP 2024
	Recommended techniques for removal of priority weeds that have been published by DPI will be consulted prior to weed control, e.g. New South Wales Weed Control Handbook (DPI, 2018b).
Pest Animal Management	Actions are still ongoing, with revisions. The Revised MCCM BMP will describe:
18. The RMP will provide methods for the safe use of pesticide.	
19. The BMP will describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).	Control measures will be implemented by Whitehaven staff or by an appropriate Pest Control Contractor(s) as required. Species to be targeted by pest animal management programs and a process for responding to incursions by new invasive species. Licences/permits, including any relevant chemical licences for pesticide use or a firearms licence for shooting, required prior to being able to undertake pest animal management works. Pest animal control will be undertaken in consideration of the control recommendations outlined in the Ecology and Management of Vertebrate Pests in NSW (DPI, 2018a) and North West Regional Strategic Pest Animal Management Plan 2018 – 2023 (North West Local Land Services, 2018).
Fire Management	Actions are still ongoing, with revisions. The Revised MCCM BMP will describe:
20. The BMP will describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken whilst vegetation is establishing).	
21. The BMP will prescribe any controlled burns in patches of Box-Gum Woodland EEC (existing woodland or derived grasslands) to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors (except in revegetation areas).	Offset areas with moderate to high overall bushfire risks will be prioritised as part of an annual ecological burn program and will be subject to conceptual and strategic fire planning and mapping. Once annual fire planning has identified individual paddocks in which ecological burns can feasibly be undertaken, and a burn plan has been prepared; MCC will consult where required with relevant stakeholders. MCC will undertake an annual ecological burn program within the feasible paddocks/burn blocks identified through the above assessment within the prioritised offset areas. The burn program

Actions for Implementing the BOS in the Original BMP 2015	Status as per Revised BMP 2024
	will be conducted by suitably experienced and capable professionals with adequate firefighting resources and training to safely and competently light and extinguish ecological burns. The location of ecological burns will consider existing fire intervals (in consideration of NSW RFS Bush Fire Coordinating Committee [2008] Bushfire Fire Risk Management Guideline intervals for grassy woodlands of 8 to 40 years; grasslands of 3 to 10 years; and dry sclerophyll forest shrub/grass sub-formation of 8 to 50 years) within non-woody (any areas considered with revegetation will be sufficiently mature to avoided fire impacts) and woody (existing remnant vegetation) areas, in consideration of Conservation Agreement conditions. Ecological burns will aim for low to moderate fire intensity burns by undertaking cool-season burns when conditions are suitable (generally autumn to spring), as well as undertaking other burn preparations to mitigate impacts to environmental assets (such as hollow bearing trees) and other constraints identified within mapped burn blocks.

4.1 Baseline data collection

4.1.1 Habitat Needs Assessment

WHC has undertaken a Habitat Needs Assessment across the Existing MCCM Offset Areas to gain a greater understand the habitat resources present (AMBS 2021a). The habitat resources measured were hollow bearing trees, stags, rock cover, permanent and semi-permanent water resources and coarse woody debris. The focus of the study was to understand the quantity and condition of habitat features in their baseline state (i.e. as found in remnant, less disturbed woodland) as well as identifying areas of habitat that were deficient in certain habitat features. The data was then used to identify priority areas and corridors that could be enhanced through habitat augmentation with the aim of enhancing habitat connectivity for fauna that utilised the resources.

Baseline Habitat Needs Assessment data has been collected on the Additional Offset Areas, but further assessments will require implementation to gather the required understanding of the habitat resources available on these areas. As such, this survey work is ongoing. The Habitat Needs Assessment study is not defined in the Original MCCM BMP but will be described in the Revised MCCM BMP. This data set ensures that habitat augmentation programs that are defined in the Revised MCCM BMP are undertaken with a suitable understanding of the existing habitat condition.

4.1.2 Baseline fauna surveys

Baseline fauna surveys were completed in 2014 for the Existing Offset Areas and 2022 for the Additional Offset Areas. The baseline data set generated was to measure change in threatened species abundance and occupancy against.

WHC redesigned its fauna monitoring program in 2020 after undertaking a statistical review of the data collected between 2014 and 2019 (AMBS 2020a; AMBS 2021b). The redesigned program aims to collect data on target groups of fauna, including threatened species, that is less prone to variance and more fit for purpose when measuring trends in abundance and occupancy over time. The revised monitoring program has been incorporated into the Revised MCCM BMP.

4.1.3 5-year Fauna Monitoring Review

WHC has undertaken a statistical review of data collected during monitoring survey undertaken between 2014 and 2019 (AMBS 2020b). The review identified that the monitoring survey design was struggling to deal with the spatial and temporal challenge of monitoring fauna responses to management, as evidenced by the high variance in the data set. The review triggered a monitoring survey design review and modifications which have been incorporated in the Revised MCCM BMP. The revised design is a more fit for purpose program that will be able to detect responses of fauna, including those listed in Table 1.2, to implemented management actions.

4.2 Direct management actions

4.2.1 Revegetation, Seeds and Tube Stock (Implementation Plan Section 1 – 11)

WHC implements an active revegetation program that aims to restore self-sustaining woodland and/or forest. From a threatened fauna perspective, the objective of the revegetation program is to increase the area (woodland patch size), quality and connectivity of native vegetation and habitats, using active revegetation methods such as direct seeding or seedling planting.

Primary revegetation commenced in 2016 is materially complete. In total 3,126 ha have been actively planted with species listed in the Indicative Revegetation Species List updated in the revised BMP. Secondary revegetation involving passive or assisted regeneration is undertaken where required to meet performance criteria set out in the Revised BMP. The Revised BMP will provide an indicative species list targeted in secondary revegetation.

Natural regeneration has been facilitated (through pest animal and weed control) where there is native woodland and forest and/or derived native grassland (moderate to good condition).

Additional revegetation or vegetation management programs that target specific threatened fauna are being implemented, with adaptive and contingency management programs described in the BMP (see Section 4.3.4). These adaptive and contingency works are additional works to further enhance the quality of habitats provided through the completed primary revegetation program. These investigations and plans aim to enhance the secondary revegetation planning frameworks already incorporated into the Revised MCCM BMP to ensure that the resources applied to secondary revegetation actions also have a focus on providing key resources for threatened fauna. Examples that could be implemented include enhancing revegetation with locally native mistletoe species (utilised by a wide array of threatened birds for foraging and nesting) or midstory enhancement planting that include species foraged on by threatened fauna (for example, sap exuding Acacia species for Squirrel Gliders).

4.2.2 Habitat Features and Habitat Augmentation (Implementation Plan Section 12 – 14)

WHC will implement a habitat augmentation program across the MCCM Biodiversity Offset Areas using a combination of salvaged resources (coarse woody debris and rock) and nest boxes.

Hollow logs and bush rock salvaged from the MCCM have all been prioritised for reuse in the MCCM mine site rehabilitation in accordance with the RMP. As such, surplus coarse woody debris and rock resources can only be sourced ad hoc for Offset Areas.

Coarse woody debris has been deployed on the Velyama West Offset Area. The deployment of coarse woody debris will be ongoing and be completed as resources become available.

Over 600 nest boxes have been deployed on the MCCM Offset Areas (AMBS, 2024). Nest boxes have been primarily deployed in habitat identified as low hollow resources when compared to baseline less disturbed habitats (See Section 5.1.1)

The implementation management action is considered to be ongoing and will be incorporated into the Revised MCCM BMP. The outcomes of the nest box program will be reviewed after five years of installation to ensure it is continuing to achieve the aim of providing habitat resources for threatened species.

4.2.3 Grazing Management (Implementation Plan Section 15– 16)

All livestock have been removed from the Offset Areas and grazing will not be incorporated into the management of the areas in accordance with the Maules Creek Offset Properties Agricultural Suitability Assessment Supplementary Report (Minesoils 2024).

Grazing by introduced pest species and over abundant native herbivores is managed through the Pest Animal Monitoring and Control Program (Section 4.2.5).

Changes to the management of grazing will be incorporated into the Revised MCCM BMP. As such, Sections 15 and 16 of the Implementation Plan for provision of Habitat for Threatened Fauna in the Offset Areas are no longer required.

4.2.4 Weed Management (Implementation Plan Section 17)

WHC undertakes weed management across the Offset Areas that exceeds the basic implementation criterion identified in the Table 4.1. The aim of the WHC weed management is to reduce perennial exotic plant cover and ensure that exotic species comprise no more than 20% of the flora. Weeds are managed to ensure that biosecurity risks are prevented, eliminated or minimised. Removal methods include both physical removal and the application of herbicides.

The Weed Management program is implemented in accordance with the NSW *Biosecurity Act 2015*, and the North West Regional Strategic Weed Management Plan 2023 – 2027 (North West Local Land Services, 2022). Weeds are controlled in line with recommendation by the New South Wales Weed Control Handbook (DPI, 2018b), Narrabri Shire Council Weed Management Plans, and NSW WeedWise.

4.2.5 Pest Animal Management (Implementation Plan Section 18 and 19)

Whitehaven adopts an adaptive pest animal management approach to control introduced pest species with the aim of achieving an overall reduction in their abundance, and ensure that their impacts on native fauna, including predation and competition, as well as disruption to existing vegetation and revegetation within the Biodiversity Offset Areas are minimised. Key species targeted include exotic predators, most notably Red Fox and Feral Cat, herbivores including Pig, Goat, Deer, Rabbit and Hare, as well as overabundant native herbivores. Control methods include direct harvest via shooting and poison baiting.

The methods applied to ensure that any use of pesticides for pest animal control is managed in a way to reduce secondary impacts.

Pest Animal management will be incorporated into the Revised MCCM BMP with the key implementation actions covered in Table 4.1 forming a small component of the wider program. Additional focus will be incorporated that ensures the monitoring program continues to evaluate the risk of trophic cascade resulting from the use of poisons for pest animal management.

4.2.6 Bush Fire Risk Management and Ecological Fire Program (Implementation Plan Section 20 and 19)

WHC will conduct an annual assessment on bushfire hazards by quantifying fuel loads and threats (human, environment and infrastructure assets within and adjacent to Offset Areas). This assessment will be used to calculate an overall bushfire risk and to prioritise control burn targets, in co-ordination with the ecological burn program.

WHCs ecological burn program will be completed annually where feasible in paddocks or burn blocks identified through the above assessment within the prioritised Offset Areas. The location of ecological burns will incorporate fire interval definitions in the NSW RFS Bush Fire Coordinating Committee (2008) Bushfire Fire Risk Management Guideline (RFS Guideline), rather than the prescribed intervals defined in existing TFIP. The RFS Guideline defines burn intervals for grassy woodlands of 8 to 40 years; grasslands of 3 to 10 years; and dry sclerophyll forest shrub/grass sub-formation of 8 to 50 years. Ecological burns will aim for low to moderate fire intensity burns by undertaking cool-season burns when conditions are suitable (generally autumn to spring), as well as undertaking other burn preparations to mitigate impacts to environmental assets (such as hollow bearing trees) and other constraints identified within mapped burn blocks.

Prior to WHCs ecological burn program being implemented, pre-burn threatened fauna assessments will be conducted for the proposed burn locations. Threatened species data from prior fauna surveys is used to determine the candidate species that could be impacted by the

proposed burns. The risk of impact to each of these candidate species will then assessed by evaluating:

- their likely activity during the burn and general mobility;
- the availability of refuge habitat that is likely to be used during the fire;
- the availability of roosting and foraging habitat adjacent to the burn area;
- any published data on each species recorded responses to fire.

If the risk of impact for any threatened species is deemed high, burn plans are adjusted or management actions are undertaken to lower the risk of impact. These include performing pre-burn surveys for candidate species and having trained fauna spotter/catchers present to respond to wildlife within the burn block.

WHC has established and will regularly maintain fire breaks (using access tracks/fire trails) around the perimeter of and internally within the MCCM Offset Areas to passively mitigate fire spreading onto or off the Offset Areas.
Bushfire and Ecological Fire management will be incorporated into the Revised MCCM BMP with the fire intervals defined by the RFS guideline rather than the frequencies defined in Table 4.1.

4.2.7 Noisy Miner Monitoring and Control (Not previously included in Implementation Plan)

WHC will undertake a 5-year trial monitoring and control program for overabundant Noisy Miners on the Additional Offset Areas.

This program is focused on improving habitat quality for the Regent Honeyeater and Swift Parrot but, based on the review of threats to Threatened Fauna detailed in Table 3.1, it is likely to improve habitat quality for several threatened bird species.

The Noisy Miner monitoring and control program was not a component of the Implementation Plan for provision of Habitat for Threatened Fauna but will be incorporated into the Revised MCCM BMP.

4.3 Habitat Assessment and Monitoring Programs

4.3.1 Annual Fauna Monitoring Program

WHC conducts a seasonally based program to monitor the effectiveness of offset management programs, including annual fauna surveys across the various offsets, which were divided into a series of targeted programs focusing on specific fauna guilds. These surveys are primarily designed to detect changes in species richness and abundance over the duration of the management, as well as their responses to revegetation, habitat augmentation and pest animal management programs. Techniques used include diurnal bird surveys, echolocation microbat survey, harp traps, pitfall and funnel traps, and remote motion sensing cameras. Linking trends in Threatened Fauna Abundance and Occupancy is a key objective of the annual monitoring program. This program will be incorporated into the Revised MCCM BMP.

4.3.2 Habitat Augmentation Monitoring Program

Coarse woody debris and nest boxes are monitored annually across the MCCM Offset Areas. The purpose of the monitoring is to investigate use of the habitat resources provided to help determine future deployment actions. Nest boxes are inspected directly, through the use of trained tree climbers. Coarse woody debris augmentation sites are monitored by use of motion detection camera. The monitoring program will be incorporated into the Revised MCCM BMP.

4.3.3 Koala Monitoring Program

WHC undertakes an annual monitoring program across all Offset Areas that contain potential Koala Habitat. The focus of the program is to gain a detailed understanding of Koala abundance, occupancy and habitat use as well as the health of Koala populations. This program is used to further enhance the efficacy of WHC offset management program and integrates with other management actions such as the Ecological Burn program. This monitoring program is run independently of the BMP.

4.3.4 Threats and Opportunities Assessment

WHC has begun to implement a Threats and Opportunities assessment in all MCCM Offset Areas. The Threats and Opportunities assessment is designed to a gain a deeper understanding how the threatening processes defined in Table 3.1 are interacting with the habitats of the MCCM Offset Areas and to determine whether the current management actions being implemented by WHC are ameliorating the influence of these threats to fauna. The investigations are also used to identify further opportunities to enhance the habitat of the MCCM Offset Areas, by identifying and quantifying habitat features identified as being important to threated fauna and identifying areas or corridors where direct intervention could increase the availability of these resources.

4.3.5 Weed Monitoring Program

WHC conducts seasonal assessments across the MCCM Offset Areas to identify weed species and the extent and condition of infestations, in order to allow for timely and prioritised control. Weed monitoring is not incorporated in the management Implementation Plan for provision of Habitat for Threatened Fauna and is considered a new action which will be incorporated into the Revised MCCM BMP.

4.3.6 Pest Animal Monitoring

WHC conducts year-round monitoring of pest animal abundance and activity across all MCCM Offset Areas. Monitoring is undertaken using a network of remote motion sensing cameras, positioned in areas expected to be frequented by these pest species, particularly along game trails or at other points of interest (e.g. water bodies or coarse woody debris). Data trends from the program help WHC assess whether addition control or targeted control actions for specific species or on specific properties are required. The Pest Animal Monitoring program will be incorporated into the Revised MCCM BMP.

5 Conclusion

This supplementary report to the Threatened Fauna Implementation Plan has been developed to maximise the prospects for regeneration of the habitat for Threatened Fauna species on the Offset Areas in the light of new investigations that have been undertaken since the submission of the original Implementation Plan in 2015. The review and revision of the 21 actions concerning the MCCM BOS outlined in 2015 resulted in the addition of 1 direct management action and removal of one management action no longer required. This supplementary report to the TFIP will be incorporated in the revised MCCM BMP (2024).

References

AMBS Ecology & Heritage (2020a) *Whitehaven Coal Biodiversity Fauna Monitoring Methodology Review.* Unpublished report prepared for Whitehaven Coal Limited.

AMBS Ecology & Heritage (2020b) *5 – Year Review of the Annual Fauna Monitoring Program Data for the Maules Creek and Tarrawonga Biodiversity Offsets.* Unpublished report prepared for Whitehaven Coal Limited.

AMBS Ecology & Heritage (2021a) *Habitat Needs Assessment for the Whitehaven Offset Properties.* Unpublished report prepared for Whitehaven Coal Limited.

AMBS Ecology & Heritage (2021b) *Whitehaven Coal Fauna Monitoring Project Plan.* Unpublished report prepared for Whitehaven Coal Limited.

AMBS Ecology & Heritage (2024) *WHC Biodiversity Habitat Augmentation Project: Implementation and Monitoring August 2023 to July 2024*. Unpublished report prepared for Whitehaven Coal Limited.

Department of Environment, Climate Change and Water (2011) *National Recovery Plan for White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland.* Department of Environment, Climate Change and Water, Sydney, New South Wales.

Department of Primary Industries (2018a). *Ecology and Management of Vertebrate Pests in NSW.* Edited by Lynette McLeod, Invasive Species Unit, NSW Department of Primary Industries, Orange

Department of Primary Industries (2018b). *New South Wales Weed Control Handbook – A guide to weed control in non-crop, aquatic and bushland situations 7th Edition.* Department of Industry 2018. *ISSN 1443–0622*

Freudenberger, D., Harvey, J. and Drew, A. (2004) Predicting biodiversity benefits of the Saltshaker Project, Boorowa, NSW. *Ecological Management and Restoration*. 5: 5-14.

Manning, A.D., Wood, J.T., Cunningham, R.B., McIntyre, S., Shorthouse, D.J., Gordon, I.J. and Lindenmayer, D.B. (2011) Integrating research and restoration the establishment of a long-term woodland experiment in south-eastern Australia. *Zoologist*. 35(3): 633 – 648.

Michael, D.R, Cunningham, R.B. and Lindenmayer, D.B. (2011) Regrowth and revegetation in temperate Australia presents a conservation challenge for reptile fauna in agricultural landscapes. *Biological Conservation*. 144: 407-415.

Minesoils Pty Ltd (2024) *Maules Creek Offset Properties Agricultural Suitability Assessment Supplementary Report.* Unpublished report prepared for WHC.

North West Local Land Services (2018) *North West Regional Strategic Pest Animal Management Plan 2023 – 2027*. Published by Local Land Services, 2024.

North West Local Land Services (2022) *North West Regional Strategic Weed Management Plan 2023 – 2027.* Published by Local Land Services, 2022.

Prober, S.M., Thiele, K.R. and Lunt, I.D. (2002) Identifying ecological barriers to restoration in temperate grassy woodlands: soil changes associated with different degradation states. *Australian Journal of Botany*. 50: 699-712.

Whitehaven Coal Limited (2014) *MCCM Threatened Fauna Implementation Plan*. Unpublished report prepared for WHC.

Whitehaven Coal Limited (2015) *MCCM Biodiversity Management Plan.* Unpublished report prepared for WHC.

Whitehaven Coal Limited (2024a) Revised *MCCM Biodiversity Management Plan.* Unpublished draft report prepared for WHC.

Whitehaven Coal Limited (2024b) Revised *MCCM Box Gum EEC Implementation Plan.* Unpublished report prepared for WHC.